HYDROMODIFICATION MANAGEMENT STUDY FOR MEADOWOOD VESTING TENTATIVE MAP

Job Number 15956

April 1, 2009
Revised: August 18, 2009

RICK ENGINEERING COMPANY

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HYDROMODIFICATION MANAGEMENT STUDY

FOR

MEADOWOOD VESTING TENTATIVE MAP

Job Number 15956

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REVISION PAGE FOR

HYDROMODIFICATION MANAGEMENT STUDY FOR

MEADOWOOD VESTING TENTATIVE MAP

J- 15956

DATE	REVISION/ CHANGES MADE TO PROJECT
April 1, 2009	Original submittal to County of San Diego.
August 18, 2009	Second submittal. Changes to report incorporate the June 26, 2009 County of San Diego's Plan Check Comments.

RESPONSE TO COUNTY'S COMMENTS FOR THE HYDROMODIFICATION MANAGEMENT STUDY FOR MEADOWOOD VESTING TENTATIVE MAP

August 18, 2009

Rick Engineering Company has reviewed June 26, 2009 County of San Diego's Department of Public Works plan check comments for the April 1, 2009 report titled "Hydromodification Management Study for Meadowood Vesting Tentative Map". The following text is the County's plan check comments (in italicized lettering), immediately followed by Rick Engineering Company's responses (in bold lettering).

1. *The pre-project drainage maps provided in the Meadowood Drainage Study show distinct discharge points for Drainage Basins 500, 600, and 700A/700B. For evaluating compliance with HMP regulations, it does not appear to be reasonable to combine Drainage Basins 500, 600, and 700A into a single basin, resulting in a single Point of Compliance (POC) for these basins. Instead, separate POCs are required for each of these drainage basins, as described below.*

   Drainage Basin 500. Most of the flow from Drainage Basin 500 appears to join a small tributary to Horse Ranch Creek (within the triangular area shown on the drainage maps along the western edge of the property). The approximate POC recommended for Drainage Basin 500 is shown in Figure 1.

   Drainage Basin 600. Most of the flow from Drainage Basin 600 leaves the basin at a single discharge point. The approximate POC recommended for Drainage Basin 600 is shown in Figure 1.

   Drainage Basins 700A and 700B. As outlined in the County's comments regarding the Meadowood Drainage Study, the delineation of Drainage Basins 700A and 700B requires reexamination. Drainage Basin 700A is currently modeled with an outlet at Node 712, while flow from Drainage Basin 700B discharges at Node 753 (see Figure 2). However, it appears from the Pre-Project Drainage Map (dated November 14, 2008) that much of the flow from 700A would actually combine with flow from 700B, with the combined flow discharging at Node 753. Therefore, a single POC could potentially be used for these two drainage basins unless significant flow actually reaches Node 712. In the latter case, two POCs would be required: at Node 753 and Node 712.

Rick Engineering Company's Response: As discussed at the meeting at the Regional Board with County of San Diego, Pardee Homes, and Rick Engineering Company representatives the project is assigning the point of compliance for Drainage Basin 7000 (7000A and B combined) at the point in the system that needs to be protected rather than the project boundary. As a result the POC has been identified on the updated exhibit located in the revised report. Further discussion of this has been included in the updated text.

2. *All Point of Compliance locations should be clearly labeled on the Water Quality and Hydromodification Management Exhibit.*

   Rick Engineering Company's Response: The exhibit has been updated to show all points of compliance associated with the project.

3. *Please revise the Water Quality and Hydromodification Management Exhibit to show the correct boundary between basins 8000A and 8000B on the east side of Horse Ranch Creek Road (i.e., it should be consistent with the Proposed Pond Locations Exhibit).*

   Rick Engineering Company's Response: The exhibits have been updated and are included in the revised report.

4. *Please check descriptions in report text for Drainage Basins 800B/8000B, 800A/8000A, 700B/7000B, and 700A/7000A, which are listed as the second, third, fourth, and fifth drainage basins, respectively, from South to North. It appears that they should be listed as the first, second, third, and fourth, respectively, from South to North.*

   Rick Engineering Company's Response: The text has been Updated in the revised report.

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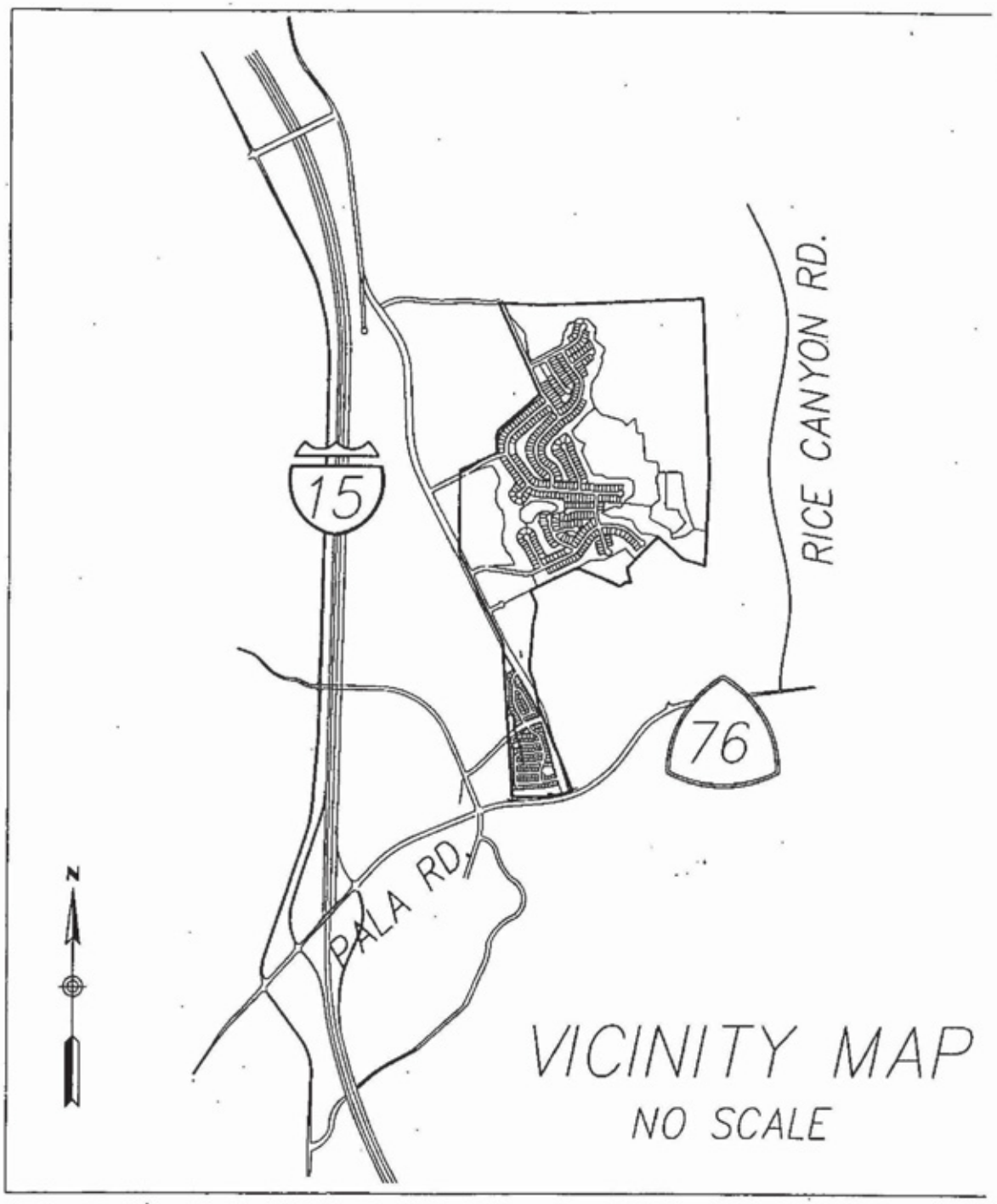
Meadowood Vesting Tentative Map – POC 7A/7B and 8A/8B (Ultimate Condition)



Prepared By:
Rick Engineering Company – Water Resources Division

DCB:JW:vs:Reports/15956.005
4-1-09
Revised 8-18-09

PROJECT DESCRIPTION

The 389.5-acre Meadowood site is located North of the State Route 76 (SR-76), otherwise known as Pala Road, approximately one-quarter mile East of Interstate 15 in the Fallbrook Community Planning Area of San Diego County, California. Currently the project site consists of orchards/trees, native shrub rural vegetation, and grassland. Pardee Homes proposes to develop approximately 218 acres (56 %) of the Meadowood site for residential and associated uses including parks, recreational trails, brush management, water tanks, wastewater treatment plant and wet weather ponds, emergency fire access road, and an elementary school. The remainder of the site will be undeveloped. This hydromodification management plan supports the Vesting Tentative Map for the Meadowood project.

The existing project site consists primarily of natural terrain and orchards. A ridge exists on the eastern half of the site, which splits the existing runoff to the East and West. The proposed development footprint of this project is entirely within the western watershed, where the natural grade directs runoff in a westerly direction towards Horse Ranch Creek, which is adjacent to Highway 15 and drains North to South. Horse Ranch Creek conveys runoff in a southerly direction and crosses State Route 76 where it confluences with the San Luis Rey River and is ultimately discharged into the Pacific Ocean.

Throughout the project, various hydromodification management measures have been incorporated into the design. These measures consist of noncontiguous sidewalks, dispersing roof flows through yards, pervious driveways (only utilized in Drainage Basin 8000A and 8000B), and "ponds"/detention facilities. Seven "ponds" and two underground vaults have been designed throughout the project to mitigate for hydromodification management. All of the ponds associated with the Meadowood project, except for one (Drainage Basin 2000), are also utilized for water quality and 100-year detention. The pond associated with Drainage Basins 2000 does not include water quality only hydromodification management and 100-year detention. The two

underground vaults associated with Drainage Basin 9000 are only sized for hydromodification management. The Continuous Simulation Hydrological Modeling (CSHM) program utilized for this project refers to the settling basins/detention basins as "ponds". To be consistent with the CSHM, this hydromodification management plan will refer to the settling basin/detention basins as ponds and the two underground facilities as vaults herein.

As stated previously, where feasible, the "ponds" have also been designed for water quality (settling basins) and detention (detention basins). For information regarding the settling basins and/or water quality measures for Meadowood, please refer to the report titled, "Storm Water Management Plan for Priority Projects (Major SWMP) for Meadowood Vesting Tentative Map (VTM)", dated July 22, 2009, prepared by Rick Engineering Company, herein referred to as the project SWMP. For information regarding the detention basin analysis, please refer to the report titled, "Drainage Study for Meadowood Vesting Tentative Map (VTM)", dated July 22, 2009, prepared by Rick Engineering Company, herein referred to as the project Drainage Study.

This report describes the numerous proposed hydromodification management measures that have been designed in accordance with the County of San Diego's Interim Hydromodification Criteria (discussed later in this text). There are seven major drainage basins discussed within the Meadowood project that are discussed in detail in this report.

BACKGROUND AND CRITERIA

Hydromodification management is required pursuant to the following:

- County of San Diego's "Watershed Protection, Stormwater Management and Discharge Control and Grading" adopted by the Board of Supervisors of the County of San Diego March 12, 2008, Code of Regulatory Ordinance No. 9926 (New Series) An Ordinance Amending Title 6, Division 7, Chapter 8 and Sections 87.205 Through 87.208, 87.218 and 87.414.

- "California Regional Water Quality Control Board, San Diego Region, Order No. R9-2007-0001, NPDES No. CAS0108758 Waste Discharge Requirements for Discharges of Urban Runoff from The Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority" Dated January 24, 2007, Section D.1.g. titled, "Hydromodification – Limitations on Increases of Runoff Discharge Rates and Durations".

- County of San Diego's "Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects" dated March 24, 2008.

- "Development of Interim Hydromodification Criteria," prepared by Brown and Caldwell for the County of San Diego, dated October 30, 2007.

Hydromodification refers to changes in a watershed's runoff characteristics resulting from development, together with associated morphological changes to channels receiving the runoff, such as changes in sediment transport characteristics and the hydraulic geometry (width, depth, slope) of channels. These changes result in streambank erosion and sedimentation, leading to habitat degradation due to loss of overhead cover and loss

of in-stream habitat structures. Under Section D.1.g of Order No. R9-2007-0001, the Copermittees will be required to prepare a Hydromodification Management Plan (HMP) and incorporate its requirements into their SUSMPs. As of March 24, 2008, the Interim Hydromodification Criteria are in effect.

The Meadowood project is subject to the Interim Hydromodification Criteria. Therefore, a hydromodification management strategy has been developed for the project based on the Interim Hydromodification Criteria. The project will use regional storm water management features (ponds) that were sized based on CSHM for hydromodification management, in addition to the upstream Low Impact Development (LID) measures. As shown by the computer modeling, this combination of features provides peak flow rate and duration control for the range of storms required for hydromodification management.

MODELING METHODOLOGY & CRITERIA

A general framework for CSHM has been developed and locations for the regional and local-level storm water management features have been identified. In addition preliminary design has been performed to determine the calculated hydromodification management volumes are met, please refer to Appendix A for the locations of the proposed ponds, vaults, and upstream LID devices. Results of the volume calculations for the storm water management features are provided in Appendix B.

Currently, projects that are subject to the Interim Hydromodification Criteria are required to mimic the pre-project characteristics (with respect to duration and volumes) for 20 percent of the 5-year storm event through the 10-year storm event. The criteria further sates that a CSHM analysis must be performed that analyzes these storm events. Therefore, the project utilized the San Diego Hydrology Model (SDHM) computer program to perform the CSHM. The SDHM files for the project are included in Appendix B.

The San Diego Hydrology Model (SDHM), dated February 5, 2009, was used to analyze CSHM for this project. However, due to design changes, Drainage Basin 700/7000 and 900/9000 have been analyzed utilizing a more recent version of SDHM dated March 27, 2009. The following table summarizes this information:

Drainage Basin	File Name	Date of File	Version of SDHM
1000	N/a	Na/	Na/
2000	Basin_2	March 31, 2009	February 5, 2009
3000	Basin_3	March 31, 2009	February 5. 2009
4000	Basin_4	March 31, 2009	February 5. 2009
7000	Basin_7AB	August 11, 2009	March 27, 2009
8000	Basin_8A	March 31, 2009	February 5, 2009
	Basin_8B	April 1, 2009	February 5, 2009
9000	Basin_9_1A	June 15, 2009	March 27, 2009
	Basin_9_1B	June 15, 2009	March 27, 2009

The SDHM generated flow duration curves for the pre-and post-project conditions and then sized a flow duration control pond or vault to match pre-project curves. Several input parameters had to be investigated in order to properly run the SDHM model. These parameters consist of soil type, slope, land uses, drainage basin boundaries, and rainfall data. The evaporation data is part of the SDHM calculations. The acreage for all the unique combinations of soil type, slope, and land uses, drainage basin boundaries were obtained with GIS Frequency analysis. Refer to Appendix C for Frequency Analysis Results, Meadowood Pre- and Post-project Soil Information Exhibits, Meadowood Pre- and Post-project Slope Information Exhibits, Meadowood Pre-Project Ground Cover Information Exhibit, and Meadowood Post-Project Land Use Information Exhibit.

Soil Type

In the pre-project condition, the site mainly consists of Soil Types C/D in the easterly and middle portions and Soil Type B on the westerly portions. The soils information was obtained from the U.S. Department of Agriculture, Natural Resources Conservation Services, dated January 4, 2007, titled "Soil Survey Geographic (SSURGO) database for San Diego County, California". In the post-project condition, the Soil Type for the developed portions of the project was assumed to be type C/D due to fill and compaction. Refer to Meadowood Pre- and Post-Project Soil Information Exhibits in Appendix C.

Slope Analysis

In the pre-project condition, the easterly portions of the project consist of steep slopes of greater than 20% and generally flow East to West. The slopes become more moderate from East to West with grades of 10% to 20% in the middle regions, 5% to 10% in the northwest and less than 5% in the southwest portion of the project. In the post project condition, the westerly portions of the project are relatively flat with grades of less than 5% through the multifamily, school site, park, and streets The single family lots in the central portions consist of flat lots, side slopes, some manufactured 2:1 slopes, and street grades of mainly 5% to 10% and small portions of 10% to 20%. Refer to Meadowood Pre- and Post-Project Slope Information Exhibits in Appendix C.

Ground Cover and Land Use

Existing ground cover for Meadowood consists of the following:

- Native shrub vegetation in the northerly and dispersed through the southerly portions of the project (Shrub was the most appropriate SDHM category for these regions).
- Orchard Trees in the central and southern portions of the project (Forest was the most appropriate SDHM category for these regions).
- Grassland along the eastern portions of the project (Grass was the most appropriate SDHM category for these regions).

This project proposes to develop approximately 56 % of the site. The proposed land use for this project comprises of single family and multi family lots, roads, noncontiguous sidewalks, parks, ponds, emergency fire access road, and a school. Refer to Meadowood Pre-Project Ground Cover Information Exhibit and Meadowood Post-Project Land Use Information Exhibit in Appendix C.

Rainfall Data

Upon review of the San Diego County, Figure 1 Rainfall Station Map, included in Appendix C, it was determined that there are two rainfall stations near the Meadowood project; Fallbrook and Lake Wohlford. The Fallbrook rainfall station is closer to the Meadowood project site. However, the precipitation data trends of Lake Wohlford are more consistent with precipitation trends associated with the Meadowood location. Therefore, the Lake Wohlford precipitation data was utilized for this project. This rationale is consistent with the draft technical memorandum titled "Rainfall Station Selection Criteria", dated January 5, 2009, prepared by Brown Caldwell. The precipitation data, titled "WOHLFORD3.wdm", dated October 15, 2008, received October 16, 2008 directly from Brown and Caldwell to Rick Engineering Company was used.

Hydromodification Management Measures

SDHM has the ability to process various hydromodification management measures, below are some of the measures applied to this project:

- **Noncontiguous sidewalk modeled as lateral basin-** runoff from the impervious sidewalk sheet flows onto the adjacent pervious surface, slowing down the runoff and allowing for limited infiltration prior to discharge into a conveyance system. The impervious and pervious surfaces are modeled as lateral basins. The lateral basin is similar to the standard basin except that the runoff from the impervious lateral basin goes to another adjacent pervious basin rather than directly to a conveyance system. Refer to Appendix D for summary of the drainage basin

hydromodification management measures and Appendix E for the hydromodification management details.

- **Roof runoff modeled as lateral basin-** the roof drains are not connected to the storm drain system. The roof flows are dispersed (not concentrated) through the vegetated yards. The lateral basin is similar to the standard basin except that the runoff from the impervious lateral basin goes to another adjacent pervious basin rather than directly to a conveyance system. Refer to Appendix D for summary of the drainage basin hydromodification management measures and Appendix E for the hydromodification management details.

- **Ponds-** The project proposes regional storm water management features (ponds) that were sized based on CSHM for hydromodification management. This computer modeling provides peak flow rate and duration control for the range of storms required for hydromodification management. Where feasible, the ponds are also designed to meet water quality and detention. Refer to the project SWMP and project Drainage Study respectively for the water quality and detention analyses, and refer to Appendix D for summary of the drainage basin Hydromodification Management Measures.

- **Porous Driveways –** For Drainage Basin 8000A and 8000B, the project proposes to convey the runoff associated with the lots to porous driveways. A gravel trench was utilized to model the porous driveways. Due to the soils (discussed later in this text), the infiltration option was turned on. Refer to Appendix D for summary of the drainage basin hydromodification management measures and Appendix E for the hydromodification management details.

- **Underground Vaults –** For Drainage Basin 9000, the project proposes to convey the runoff associated with the natural area east of Horse Ranch Creek Road, Horse Ranch Creek Road, the SR 76, and the sewer treatment plant to one of two

underground vaults. Refer to Appendix D for a summary of the drainage basin hydromodification management measures.

DRAINAGE CHARACTERISTICS AND RESULTS FOR HYDROMODIFICATION MANAGEMENT

The pre-project node drainage basins have been assigned names utilizing in the 100's, i.e. 100, 200, 300, 400, 700A and 700B, 800A and 800B, and 900. The post-project drainage basins have been assigned names utilizing the 1000's i.e. 1000, 2000A and 2000B, 3000, 4000, 7000A and 7000B, 8000A and 8000B, and 9000. For the purpose of this hydromodification management plan seven drainage basins have been identified. Drainage basin 100 corresponds to 1000, 200 to 2000A and 2000B, 300 to 3000, 400 to 4000, 700A and 700B to 7000A and 7000B, and 800A and 800B to 8000A and 8000B, and 900 to 9000. Drainage basins 700A and 700B and 7000A and 7000B have been combined because they have the same point of compliance. Similarly drainage basins 800A and 800B and 8000A and 8000B have been combined because they have the same point of compliance. Both of these points of compliance are discussed in more detail later in this section. All of the drainage basins associated with the developable footprint for the Meadowood project are tributary to Horse Ranch Creek.

The following text describes the pre- and post project drainage basins and the results of the CSHM. Also, located at the end of this section (after the summary), is an exhibit that delineates the drainage basins, proposed ponds, vaults, and POCs.

In addition, a field reconnaissance was performed to analyze the proposed outfall locations, review the watershed, and determined the appropriate points of compliance (POCs). Based on the observation from the field reconnaissance, it was determined that portions of this watershed has already experienced hydromodification due to the existing developed agriculture areas (the existing orchards). Further discussion of this has been included in the text below. .

Drainage Basin 100/1000 (POC 1)

Drainage basin 100 (pre-project) is located in the most northerly portion of the project. This pre-project drainage basin is 11.2 acres sloping northeast to southwest at grades

greater than 20%. It is comprised entirely of Soil Type C/D and the main ground cover is native shrub vegetation.

Drainage basin 1000 (post-project) is 9.6 acres of undisturbed land without introducing any post-project development flows. There is a proposed street (Street D) bisecting this drainage basin. The flows from the northern portion of the proposed Street D are conveyed southerly to drainage basin 3000; therefore, no post-project flows associated with drainage basin 100/1000 commingle with the undeveloped/natural flows. Since this project is not adversely affecting this drainage basin and there is no development to mitigate for, no hydromodification management measures were proposed.

Drainage Basin 200/2000A and 2000B (POC 2)

Drainage Basin 200 (pre-project) is the second drainage basin North to South. This pre-project drainage basin is 62.1 acres. In the upstream portion of the drainage basin the slopes consists of steep grades greater than 20%. Throughout the remainder of the basin the slopes consists of moderate grades of 10% to 20% and grades less than 5% in the southwest corner of the drainage basin. The existing ground cover is mainly native shrub with a small portion consisting of an existing agriculturally developed area (orchards) in the southern parts of the drainage basin. The existing Soil Type is mainly C/D with Soil Type B in the middle regions of the drainage basin and southwest boundary of the drainage basin.

In post-project condition, this drainage basin is divided into two drainage basins; 2000A (51.0 acres) and 2000B (8.5 acres). Only 9.4 acres within drainage basin 2000A is proposed residential development, the remainder 41.6 acres (approximately 82%) will remain undisturbed/natural. The residential development consists of single-family residential lots, roads, manufactured slopes, noncontiguous sidewalks, trails, and a regional pond. The street grades are within 5% to 10% range. All developed segments are modeled with Soil Type C/D in SDHM. The noncontiguous sidewalks sheet flow onto the adjacent pervious parkways. The roof drains are not connected to the storm drain system.

The roof flows are dispersed (not concentrated) through the vegetated yard. In addition a regional pond is proposed at the southwest corner of the drainage basin. Drainage basin 2000B conveys flows of undisturbed/natural land by means of a clean water system (i.e. A storm drain system dedicated for conveying flow from natural, undisturbed area without commingling with runoff from the developed areas). The runoff associated with drainage basin 2000B does not enter the pond, only the runoff associated with drainage basin 2000A enters the ponds. However the outfalls from the pond (drainage basin 2000A) and 2000B are combined (POC 2) and are at the same location as the pre-project location. Based on information from the geotechnical engineer, infiltration was not feasible in this area.

The regional pond (DB2) is located at the downstream portion of drainage basin 2000A. This pond will satisfy the hydromodification management and 100-year detention volume (this pond does not include water quality). The required volume calculated by SDHM is 0.5 acre-ft and the actual volume for this pond is 1.7 acre-ft, refer to the project SWMP for water quality treatment and this Drainage Basin and the project Drainage Study for the volume calculation to attenuate the 100-year post-project to pre-project.

Drainage Basin 300/3000 (POC 3)

Drainage basin 300 (pre-project) is 58.5 acres and is the third drainage basin North to South, sloping East to West at grades greater than 20% on the eastern portions, 10% to 20% in the middle, and 5% to 10% in the western sections. The existing ground cover consists of native shrub in the easterly portions and an existing agriculturally developed area (orchards) in the westerly regions. The Soil Types for this drainage basin consist of C/D in the eastern portion and Soil Type B in the western region.

Drainage basin 3000 (post-project) is 61.6 acres, which includes the northern part of Street D. Approximately 41% of drainage basin 3000 is comprised of undisturbed/natural land in the easterly regions of this drainage basin. The developed area for this drainage basin is approximately 21.0 acres, comprised of single-family residential lots, roads,

manufactured slopes, trails, noncontiguous sidewalks, and regional pond occupying the westerly regions. The street grades are mostly less than 5% with some areas of 5% to 10%. All developed segments are modeled with Soil Type C/D in SDHM. The noncontiguous sidewalks sheet flow onto the adjacent pervious parkways. The roof drains are not connected to the storm drain system. The roof flows are dispersed (not concentrated) through the vegetated yard. In addition a regional pond is proposed at the westerly corner of the drainage basin. Based on information from the geotechnical engineer, infiltration was not feasible in this area.

The regional pond (DB3) satisfies the required water quality treatment control, hydromodification management, and 100-year detention volume. The required volume calculated by SDHM is 3.3 acre-feet and the provided volume for this pond is 5.0 acre-feet. Refer to the project SWMP for water quality treatment and the project Drainage Study for the volume calculation to attenuate the 100-year post-project to pre-project.

Basin 400/4000 (POC 4)

Drainage basin 400 (pre-project) is 11.1 acres and is located at southwest corner of drainage basin 300, sloping southeast to northwest. The terrain shows slopes from greater than 20% in the southern portions to 10% to 20% for the majority of the drainage basin to more moderate slopes of 5% to 10% in the northern region of the drainage basin. The ground cover consists an existing agriculturally developed area (orchards). The Soil Types for this drainage basin consist of C/D in the southern and Soil Type B in the northern regions.

Drainage basin 4000 (post-project) is 11.2 acres of single-family residential lots, road, manufactured slopes, noncontiguous sidewalks, trails, and a regional pond. The street grades are 5% to 10% in the northeast to less than 5% in the southwest regions. Drainage basin 4000 (post-project) consists entirely of Soil Type C/D. The noncontiguous sidewalks sheet flow onto the adjacent pervious parkways. The roof drains are not connected to the storm drain system. The roof flows are dispersed (not concentrated)

through the vegetated yard. In addition a regional pond is proposed in the southern region of drainage basin 4000. Based on information from the geotechnical engineer, infiltration was not feasible in this area.

The regional pond (DB4) satisfies the required water quality treatment control, hydromodification management, and 100-year detention volume. The required volume calculated by SDHM is 1.1 acre-ft and the provided volume for this pond is 1.7 acre-ft, refer to the project SWMP for water quality treatment and the project Drainage Study for the volume calculation to attenuate the 100-year post-project to pre-project.

Drainage Basin 700/7000 (POC 7A/7B)

As stated previously, the POC for Drainage Basin 700A and 700B and 7000A and 7000b have been combined. The combining of these drainage basins was due in part to the existing drainage patterns in the pre-project condition and observations of existing hydromodification during a field reconnaissance.

The points/locations at which runoff from Drainage Basin 700A exit the project site and are immediately conveyed to Horse Ranch Creek. All of these flowpaths combine or confluence in the same swale. In other words each location in which runoff exits the project site and flows westerly all combine in the same flowpath/downstream waters which is located within the Horse Ranch Creek Floodplain. The swales convey these flows to a southerly location and confluence with the flows tributary to Drainage Basin 700B.

In addition, based on the results of the field reconnaissance, it was observed that there is significant erosion, existing today, located immediately downstream of the northern limits of Drainage Basin 700/7000 (this is also evident on the topographic information provided on the exhibit located in Appendix A). This active head cutting and erosion occurring is due to the fact that the majority of the northern portion of Drainage Basin 700/7000 is an existing developed agriculture area that consists of mature irrigated

orchards. While the majority of the other drainage basins associated with this project also have existing developed orchards, the evidence of hydromodification (as a result of the developed orchards) was not as evident as observed for this drainage basin. This is in part due to the topography of the drainage basin and the fact that the majority of this basin is comprised of existing developed orchards. If proposed flows associated with the Meadowood VTM were to be released in these areas, it would have an adverse impact on this watershed.

As a result of defining the flowpaths associated with the runoff for Drainage Basin 700/7000 and observations of existing hydromodification occurring today, it was determined that it is appropriate to combine Drainage Basins 700A/B and 7000A/B and assign one POC for this analysis.

Additionally, the neighboring project to the west (Campus Park), is proposing a design, immediately west of the 700A/7000A drainage basin boundary, that would be adversely affected if the Meadowood project released flows at this location.

For reference, exhibits have been included in Appendix F that delineate the flow paths and highlight this area. From the exhibits, it can be observed that the runoff from these drainage basins do in fact confluence. Also shown on the exhibits is topographic information that shows the severe erosion and head cutting that is occurring today as a result of the existing developed orchards. In addition, an exhibit has been created to show the proposed grading of the adjacent project and show that this proposed design will not impact adjacent projects (ultimate condition).

To address concerns that at the outfall location of Drainage Basin 7000A and 700B (POC 7A/7B) there may an increase in erosion between the outfall and the downstream existing waters, the project is proposing the design of a small vegetated channel with native vegetation that will safely convey the 10-year flow rate (as determined by the SDHM model) from the outfall to the downstream waters. As you can see from the exhibits, the

downstream waters are associated with the dense grove of trees located immediate west of POC 7A/7B. This grove of trees is identified as Southern Arroyo Willow Riparian Forrest (herein referred to as Riparian Forest) and from an environmental standpoint cannot be disturbed. Therefore, the proposed channel will convey the flows in a westerly direction. As the channel approaches the Riparian Forrest, it will flatten out and ultimately daylight into the existing topography. This proposed solution has been shown on both the Interim and Ultimate Condition exhibits. As stated above, the Interim Condition exhibit is only the Meadowood project and the Ultimate Condition exhibit includes the Meadowood Project and the Campus Park project. Upon final design, the channel can be designed with natural cover that can withstand the velocities and shear forces of the 10-year event as well as withstand the lateral forces occurring from the 100-Year Horse Ranch Creek Floodplain.

The following text describes the drainage basins and the results of the SDHM analysis:

Drainage basin 700A (pre-project) is 192.2 acres and is located in the central portion of the project. The general slope trend of this drainage basin is northeast to southwest with slopes greater than 20% in the eastern side, grades of 10% to 20% centrally, and grades of 5% to 10% and less than 5% toward the western boundary. The undeveloped portion of this drainage basin is comprised of existing ground cover that ranges from small sections of shrub vegetation on the northeast, central, and southern portions of drainage basin 700A. However, the majority of this drainage basin is comprised of an existing agriculturally developed area (orchards). The Soil Types for this drainage basin consist of C/D in the eastern portion and Soil Type B in the western region.

Drainage basin 7000A (post-project) is 195.0 acres. Approximately 45% of drainage basin 7000A is comprised of undisturbed/natural land. The developed area for this drainage basin is approximately 123 acres comprised of single-family residential lots, multi-family, roads, manufactured slopes, noncontiguous sidewalks, trail, park, and regional pond occupying the westerly regions. The Street grades are mostly less than 5%

with some areas of 5% to 10% and 10% to 20%. The easterly regions of this drainage basin remain undisturbed/natural. All developed segments are modeled with Soil Type C/D in SDHM. The noncontiguous sidewalks sheet flow onto the adjacent pervious parkways. The roof drains from the single-family lots are not connected to the storm drain system. The roof flows are dispersed (not concentrated) through the vegetated yard. In addition a regional pond (DB7A) is proposed in the southwesterly region of 7000A. Based on information from the geotechnical engineer, infiltration was not feasible in this area.

The regional pond (DB7A) satisfies the required water quality treatment control, hydromodification management, and 100-year detention volume. The required volume calculated by SDHM is 14.0 acre-ft and the provided volume for this pond is 20.0 acre-feet. Refer to the project SWMP for water quality treatment and the project Drainage Study for the volume calculation to attenuate the 100-year post-project to pre-project. The flows released from the pond (DB7A) are conveyed in a southerly direction to the outfall from Drainage Basin 7000B (POC 7A/7B). See exhibits for this POC location.

Drainage basin 700B (pre-project) is 43.8 acres and is located immediately south of drainage basin 7000A. The general slope trend of the drainage basin is east to West. The existing grades are greater than 20% in the eastern portion of the drainage basin and transition to more moderate grades of 5% to 10% and less than 5% as the flows travel west. The ground cover consists of shrub vegetation and existing developed agriculture areas (orchards) in the eastern regions and grassland in the western portions. The Soil Types for this drainage basin consist of C/D in the eastern and Soil Type B in the western regions.

Drainage basin 7000B (post-project) is 45.3 acres. Approximately 60% of drainage basin 7000B is comprised of undisturbed/natural land in the easterly regions of this drainage basin. The developed portion of this drainage basin is approximately 17.9 acres of school site, roads, manufactured slopes, noncontiguous sidewalks, trails, and a regional pond.

The street grades are less than 5%. All developed segments are modeled with Soil Type C/D in SDHM. The noncontiguous sidewalks sheet flow onto the adjacent pervious parkways. In addition a regional pond is proposed in the southern region of the school site, in the southwest portion of the drainage basin. Based on information from the geotechnical engineer, infiltration was not feasible in this area.

The regional pond (DB7B) satisfies the required water quality treatment control, hydromodification management, and 100-year detention volume. The required volume calculated by SDHM is 3.7 acre-feet and the provided volume for this pond is 5.1 acre-feet Refer to the project SWMP for water quality treatment and the project Drainage Study for the volume calculation to attenuate the 100-year post-project to pre-project.

The outflows from both regional ponds (DB7A and DB7B) combine at POC 7A/7B and are conveyed in a proposed vegetated channel to the downstream waters. Refer to Exhibits located in Appendix F for reference.

Drainage Basin 800A/8000A and 800B/8000B (POC 8A/8B)

From the topographic information, it is noted that the runoff associated with both Drainage Basin 800A and 800B sheet flow and there is not a defined location in which runoff exits the project. The runoff exiting the project site in both the pre- and post-project condition, immediately outfalls into the 100-year floodplain associated with Horse Ranch Creek. Both post-project outfalls for Drainage Basin 8000A and 8000B immediately outfall into the Riparian Forrest. Based on this information, it is appropriate to combine these drainage basins and assign one POC for analysis (POC 8A/8B).

As stated above, the POC for drainage basin 800A and 800B and 8000A and 8000B have been combined. However in order to accurately size the post-project hydromodification management facilities with the SDHM model, the analyses were separated. Drainage basins 800A was analyzed with 8000A and drainage basin 800B was analyzed with

8000B. The following text describes the drainage basins and the results of the SDHM analysis.

Drainage basin 800A (pre-project) is 27.9 acres and is located south of drainage basin 700b. The general drainage trends are in an east to west direction with grades greater than 20% in the eastern portions and grades less than 5% in the western regions. The ground cover consists of shrub vegetation and an existing agriculturally developed area (orchards) in the eastern regions and grassland in the western portions. The Soil Types for this drainage basin consist of C/D in the eastern and Soil Type B in the western regions.

Drainage basin 8000A (post-project) is 26.8 acres from which 14.6 acres is comprised of residential lots and roads, occupying the western regions of this drainage basin. Approximately 47% of drainage basin 8000A is comprised of undisturbed/natural land in the easterly regions of this drainage basin. The proposed street grades are less than 5%. All developed segments are modeled with Soil Type C/D in SDHM.

Drainage basin 800B (pre-project) is 22.8 acres and is located south of drainage basin 800A. The general drainage trends are in an east to west direction with grades greater than 20% in the eastern portions and grades less than 5% in the western regions. The ground cover consists of shrub vegetation and an existing agriculturally developed area (orchards) in the eastern regions and grassland in the western portions. The Soil Types for this drainage basin consist of C/D in the eastern and Soil Type B in the western regions.

Drainage basin 8000B (post-project) is 26.1 acres from which 11.0 acres is comprised of residential lots and roads, occupying the western regions of this drainage basin. Approximately 53% of drainage basin 8000B is comprised of undisturbed/natural land in the easterly regions of this drainage basin. The proposed street grades are less than 5%

with a small portion of 5% to 10%. All developed segments are modeled with Soil Type C/D in SDHM.

Based on analyses performed by the project's Geotechnical Engineer and a letter from Geocon Incorporated dated October 14, 2008 titled "Meadowood (Pankey Ranch) San Diego County, California, Feasibility of On-Site Hydromodification", it has been determined that portions of the area associated with this drainage basin are consisting of poor soils, underlying hard granitic rock, and areas that are prone to liquefaction. As a result, the soils associated with this area will be completely removed and replaced with material that has an equivalent infiltration rate equal to 1 inch per hour. As such, the infiltration option was turned on for the SDHM analyses for this drainage basin. A letter has been prepared by Geocon Incorporated, titled, "Meadowood (Pankey Ranch) San Diego, California Planning Area 1 Infiltration," dated March 30, 2009. This letter supports the infiltration rate utilized in the SDHM analysis for Drainage Basin 8000A and 8000B. This letter has been included in this report and is located in Appendix C.

Similar to the northern drainage basins, the roof drains from the single-family lots are not connected to the storm drain system. The roof flows are dispersed (not concentrated) through the vegetated yard. However, different from the northern basins, infiltration was assumed in the driveways. The driveways will be comprised of porous material. In addition, a regional pond is proposed in the Westerly region of drainage basin 8000A and 8000B.

The two ponds (DB8A and DB8B) are proposed for this area to satisfy the required water quality treatment control, hydromodification management, and 100-year detention volume. The required volume calculated by SDHM for Drainage Basin 8000A (DB8A) is 1.1 acre-feet and the provided volume for this pond is 2.7 acre-feet. The required volume calculated by SDHM for Drainage Basin 8000B (DB8B) is 2.0 acre-feet and the provided volume for this pond is 3.7 acre-feet. The flows associated with these outfalls are immediately conveyed to the existing downstream waters. Refer to the project SWMP

for water quality treatment and the project Drainage Study for the volume calculation to attenuate the 100-year post-project to pre-project.

Drainage Basin 900/9000A (POC 9)

Drainage basin 900 (pre-project) is 21.4 acres and is the most southerly drainage basin associated with the Meadowood project. The general drainage trends are north to south with grades less than 5% in the southern portions and varying 5% to 10% and 10% to 20% in the northern regions. The ground cover consists of an existing agriculturally developed area (orchards) and the existing SR-76 road that goes through this drainage basin. The Soil Types for this drainage basin consist of B with a small portion of Soil Type A and C/D in the most southern and northern corner, respectively.

Drainage basin 9000 (post-project) is 18.3 acres. The majority of this drainage basin is comprised of natural area and the proposed sewer treatment plant. In addition, the Meadowood project is proposing to build the remaining two lanes associated with Horse Ranch Creek Road. In both the pre- and post-project condition, this drainage basin conveys flows to a dual 30 inch RCP located along SR 76. The dual RCPs convey flow from the north side of SR 76 to the south side. The RCPs outfall into an existing trapezoidal channel that is aligned on the south side of SR 76 and conveys flows westerly to Horse Ranch Creek.

For the purposes of this analysis, Drainage Basin 9000 has been divided into two subbasins. Drainage Basin 900A is the pre-project subbasin associated with the Meadowood VTM and Drainage Basin 900B is the pre-project subbasin associated with the Sewer Treatment Plant. Drainage Basin 9000A is the post-project subbasin associated with the Meadowood VTM and Drainage Basin 9000B is the post-project subbasin associated with the Sewer Treatment Plant.

The sewer treatment plant is within the project boundary, however it is not apart of the work associated with the VTM, it is associated with a major use permit (MUP). Since the

MUP and VTM approval is dependant on one another, this hydromodification management study has sized a facility within the limits of the plant that will satisfy the IHC. The facility within these limits will be maintained by the plant and not the Meadowood Home Owners Association. This facility only includes volume for hydromodification management. The plant will be responsible to implement on-site best management practices (BMPs) for water quality.

Two facilities are proposed for this drainage basin. As stated previously, one facility will be located within the limits of the sewer treatment plant and has only been designed to mitigate for the proposed plant, and the other facility will be immediately south of the sewer treatment plant and has been designed to mitigate for the Meadowood development. Both vaults have only been designed for hydromodification management only. For the on-site water quality BMPs for the Meadowood portion of this drainage basin, refer to the project's SWMP. In addition, 100-year detention is not required for either of the vaults due to the increase in flow rate was negligible (comparing pre-project to post-project) and the downstream drainage systems have capacity to convey the post-project flow rates. Refer to the project Drainage Study for the discussions regarding the 100-year storm event.

Because the Sewer Treatment Plant is not apart of the work associated with this VTM, the hydromodification analyses have been separated. The analyses associated with "Basin 9A" are associated with the Meadowood portion and the analyses associated with "Basin 9B" are associated with the Sewer Treatment Plant. The required volume calculated by SDHM for the sewer treatment plant (V9A) is 0.48 acre-feet and the actual volume is 0.48 acre feet. The required volume calculated by SDHM for the remaining portion of Drainage Basin 9000 (associated with the Meadowood development) is 0.26 acre-feet and the actual volume for this pond is 0.29 acre-feet.

Summary

In summary, the following table provides the results of the SDHM analyses and the actual pond volumes.

Post-Project Drainage Basin	Point of Compliance (POC)	Detention Facility Volumes (acre-feet)				
		Detention Facility[3]	SDHM Volume[4]	Water Quality Volume	Volume for 100-Year Detention	Actual Volume[2]
1000	POC 1	N/a	n/a	n/a	n/a	n/a
2000A/B	POC 2	DB 2	0.5	n/a	0.9	1.7
3000	POC 3	DB 3	3.3	1.7	4.0	5.0
4000	POC 4	DB 4	1.1	0.4	1.2	1.7
7000A/B	POC 7A/7B	DB 7A	5.6	6.8	19.0	30.0
		DB 7B	3.5	1.3	4.2	5.1
8000A/B	POC 8A/8B	DB 8A	1.1	1.1	1.9	2.7
		DB 8B	2.0	1.0	2.8	3.7
9000	POC 9	V 9A	0.48	n/a	n/a	0.48
		V 9B	0.26	n/a	n/a	0.29

(1) Upon final design all ponds will have detailed outlet work analyses, 1 foot of freeboard, and an emergency spillway.
(2) Actual volume is the volume shown on plans.
(3) There are two different types of detention facilities proposed throughout the project; above ground detention facilities (DB) and underground vaults (V).
(4) Volumes are calculated utilizing the SDHM program and are for hydromodification management.

All of the ponds and vaults, with the exception of the vault located within the sewer treatment plant, will be inspected and maintained by the project's Home Owners Association (HOA). Detailed inspection, maintenance, and frequency procedures have been identified in the project's Storm Water Management Plan.


PALA MESA HEIGHTS DRIVE
POC 1
1000
2000A
2000B
POC 2
(DB3)
POC 3
3000
(DB2)*
4000
POC 4
(DB4)
7000A

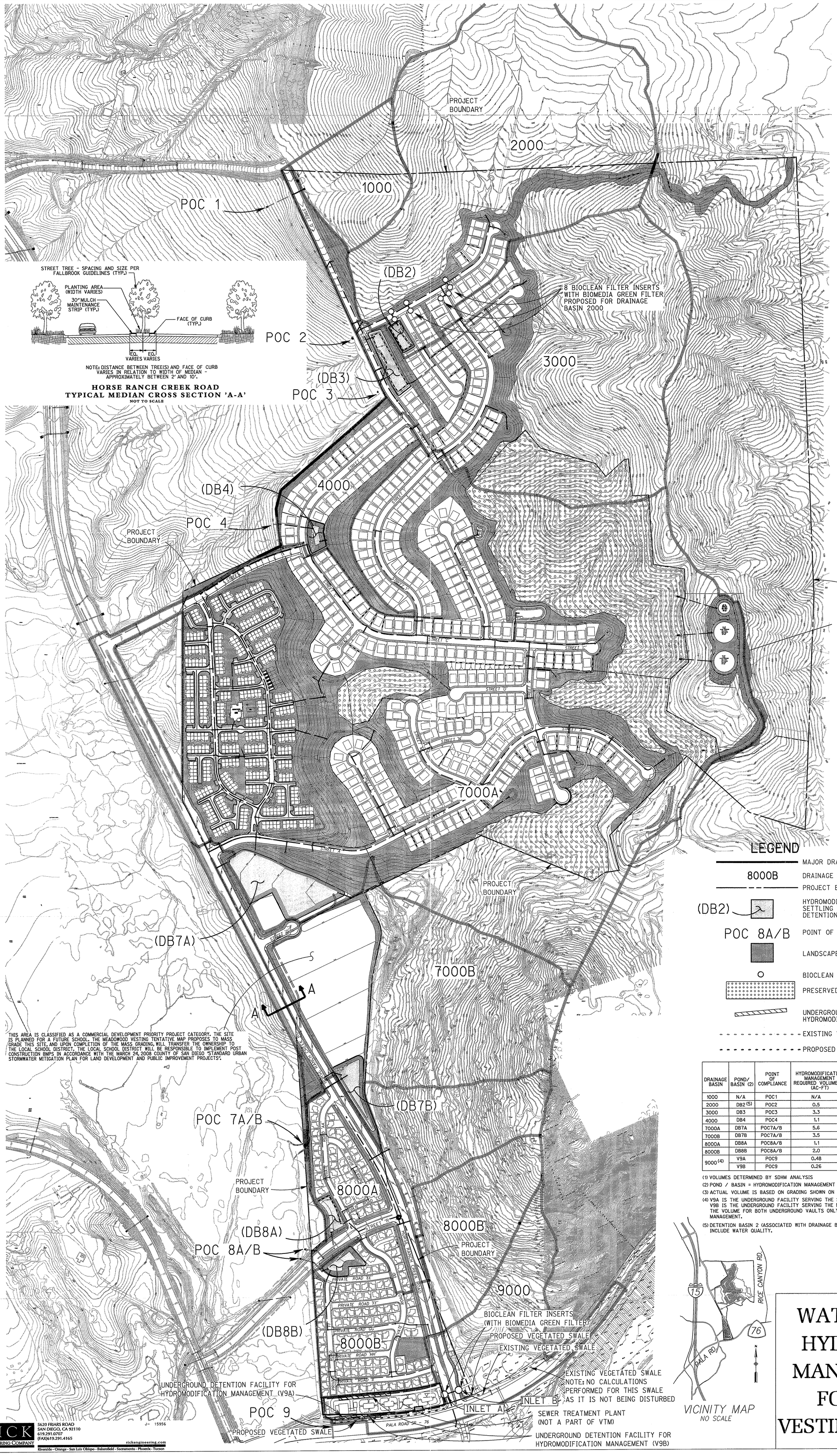
REFERENCES

- County of San Diego's "Watershed Protection, Stormwater Management and Discharge Control and Grading", adopted by the Board of Supervisors of the County of San Diego March 12, 2008, Code of Regulatory Ordinance No. 9926 (New Series) An Ordinance Amending Title 6, Division 7, Chapter 8 and Sections 87.205 Through 87.208, 87.218 and 87.414.
- "California Regional Water Quality Control Board, San Diego Region, Order No. R9-2007-0001, NPDES No. CAS0108758 Waste Discharge Requirements for Discharges of Urban Runoff from The Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority" Dated January 24, 2007, Section D.1.g. "Hydromodification – Limitations on Increases of Runoff Discharge Rates and Durations".
- County of San Diego's "Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects" dated March 24, 2008.
- "Minimum Criteria for Evaluation of Storm Water Controls to Meet Interim Hydromodification Criteria (IHC)," prepared by Brown and Caldwell, dated August 11, 2008 were used to meet the criteria described in "Development of Interim Hydromodification Criteria," prepared by Brown and Caldwell, dated October 30, 2007.
- "San Diego Hydrology Model User Manual" dated January 2008, prepared by Clear Creek Solution, Inc.
- "Soil Survey Geographic (SSURGO) database for San Diego County, California", dated January 4, 2007.
- Geocon Incorporated letter titled "Meadowood (Pankey Ranch) San Diego County, California, Feasibility of On-Site Hydromodification", dated October 14, 2008.

- Geocon Incorporated letter titled "Meadowood (Pankey Ranch) San Diego California Planning Area 1 Infiltration" dated March 30, 2009.
- Brown and Caldwell's "Rainfall Station Selection Criteria" Draft Technical Memorandum dated January 5, 2009.
- San Diego County's Figure 1 Rainfall Station Map from HMP TAC ftp site titled "WOHLFORD3.wdm", dated October 15, 2008, received October 16, 2008 directly from Brown and Caldwell to Rick Engineering Company.
- "Storm Water Management Plan for priority projects (Major SWMP) for Meadowood Vesting Tentative Map (VTM)", dated August 18, 2009, prepared by Rick Engineering Company.
- "Drainage Study for Meadowood Vesting Tentative Map (VTM), dated August 18, 2009, prepared by Rick Engineering Company.

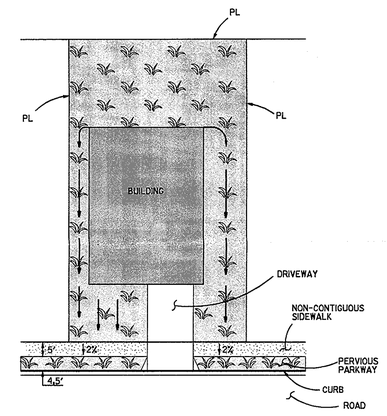
Appendix A

Water Quality and Hydromodification Management Exhibit for Meadowood Vesting Tentative Map

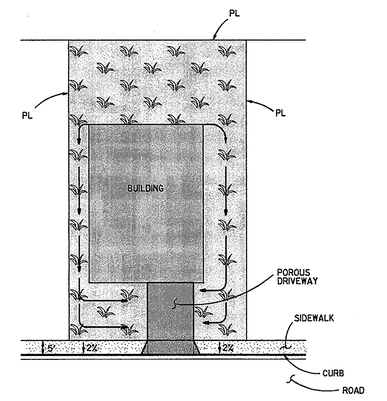


NOTE: DISTANCE BETWEEN TREE(S) AND FACE OF CURB VARIES IN RELATION TO WIDTH OF MEDIAN - APPROXIMATELY BETWEEN 2' AND 10'.

HORSE RANCH CREEK ROAD
TYPICAL MEDIAN CROSS SECTION 'A-A'
NOT TO SCALE



TYPICAL DETAIL 1 FOR DRAINAGE BASINS 2000A, 3000, 4000 AND 7000A



TYPICAL DETAIL 2 FOR DRAINAGE BASINS 8000A, AND 8000B

PROJECT BOUNDARY

NOTES

1) PROJECT BOUNDARY IS COMPRISED OF 389.5 ACRES. ONLY 219.5 ACRES (56%) WILL BE DEVELOPED AS A RESULT OF THIS PROJECT.
2) FOR DRAINAGE 2000A, 3000, 4000 & 7000A, REFER TO TYPICAL DETAIL 1.
3) FOR DRAINAGE BASIN 8000A & 8000B, REFER TO TYPICAL DETAIL 2
4) FOR DRAINAGE BASINS 2000A, 3000A, 4000A & 7000A, LID CONCEPTS (NON-CONTIGUOUS SIDEWALKS AND VEGETATED PARKWAYS) ARE PROPOSED THROUGHOUT. PLANT SELECTION PER LANDSCAPE ARCHITECT.

LEGEND

- MAJOR DRAINAGE BASIN
- 8000B — DRAINAGE BASIN NUMBER
- PROJECT BOUNARY
- (DB2) — HYDROMODIFICATION MANAGEMENT POND/ SETTLING BASIN/ DETENTION BASIN
- POC 8A/B — POINT OF COMPLIANCE
- LANDSCAPED AREAS
- BIOCLEAN FILER INSERT WITH BIOMEDIA GREEN FILTER
- PRESERVED ORCHARD AREAS
- UNDERGROUND DETENTION FACILITY FOR HYDROMODIFICATION MANAGEMENT
- EXISTING VEGETATED SWALES
- PROPOSED VEGETATED SWALES

DRAINAGE BASIN	POND/ BASIN (2)	POINT OF COMPLIANCE	HYDROMODIFICATION MANAGEMENT REQUIRED VOLUME (1) (AC-FT)	WATER QUALITY REQUIRED VOLUME (AC-FT)	REQUIRED VOLUME FOR HYDROMODIFICATION MANAGEMENT/ WATER QUALITY AND 100-YR DETENTION (AC-FT)	ACTUAL VOLUME (3) (AC-FT)
1000	N/A	POC1	N/A	N/A	N/A	N/A
2000	DB2 (5)	POC2	0.5	N/A	0.9	1.7
3000	DB3	POC3	3.3	1.7	4.0	5.0
4000	DB4	POC4	1.1	0.4	1.2	1.7
7000A	DB7A	POC7A/B	5.6	6.8	19.0	30.0
7000B	DB7B	POC7A/B	3.5	1.3	4.2	5.1
8000A	DB8A	POC8A/B	1.1	1.1	1.9	2.7
8000B	DB8B	POC8A/B	2.0	1.0	2.8	3.7
9000 (4)	V9A	POC9	0.48	N/A	N/A	0.48
	V9B	POC9	0.26	N/A	N/A	0.29

(1) VOLUMES DETERMINED BY SDHM ANALYSIS
(2) POND / BASIN = HYDROMODIFICATION MANAGEMENT POND/ WATER QUALITY BASIN/ DETENTION BASIN
(3) ACTUAL VOLUME IS BASED ON GRADING SHOWN ON VESTED TENTATIVE MAP
(4) V9A IS THE UNDERGROUND FACILITY SERVING THE SEWER TREATMENT PLANT & V9B IS THE UNDERGROUND FACILITY SERVING THE MEADOWOOD PROJECT. THE VOLUME FOR BOTH UNDERGROUND VAULTS ONLY INCLUDES HYDROMODIFICATION MANAGEMENT.
(5) DETENTION BASIN 2 (ASSOCIATED WITH DRAINAGE BASIN 2000) DOES NOT INCLUDE WATER QUALITY.

VICINITY MAP
NO SCALE

N

200 100 0 200 400 600

GRAPHIC SCALE 1"= 200'

THIS AREA IS CLASSIFIED AS A COMMERCIAL DEVELOPMENT PRIORITY PROJECT CATEGORY. THE SITE IS PLANNED FOR A FUTURE SCHOOL. THE MEADOWOOD VESTING TENTATIVE MAP PROPOSES TO MASS GRADE THIS SITE, AND UPON COMPLETION OF THE MASS GRADING, WILL TRANSFER THE OWNERSHIP TO THE LOCAL SCHOOL DISTRICT. THE LOCAL SCHOOL DISTRICT WILL BE RESPONSIBLE TO IMPLEMENT POST CONSTRUCTION BMPS IN ACCORDANCE WITH THE MARCH 24, 2008 COUNTY OF SAN DIEGO "STANDARD URBAN STORMWATER MITIGATION PLAN FOR LAND DEVELOPMENT AND PUBLIC IMPROVEMENT PROJECTS".

WATER QUALITY AND HYDROMODIFICATION MANAGEMENT EXHIBIT FOR MEADOWOOD VESTING TENTATIVE MAP

RICK ENGINEERING COMPANY
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J- 15956

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12-AUG-2009 13:31

Appendix B

Continuous Simulation Hydrological Model for Meadowood Vesting Tentative Map (Electronic and Hard Copy)

Drainage Basin 200/2000A/2000B

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_2
Site Address:
City :
Report Date : 3/31/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 0.80
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 200
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.04
B,Forest,Mod(5-10%)	.83
B,Forest,Stee(10-20)	1.69
B,Forest,Very(>20%)	.74
B,Shrub,Flat(0-5%)	.87
B,Shrub,Mod(5-10%)	.22
B,Shrub,Stee(10-20%)	1.23
B,Shrub,Very S(>20%)	3.79
B,Grass,Mod(5-10%)	.19
B,Grass,Stee(10-20%)	.24
B,Grass,Very S(>20%)	.04
C D,Forest,St(10-20)	.01
C D,Forest,Very(>20)	.04
C D,Shrub,Flat(0-5%)	2.71
C D,Shrub,Mod(5-10%)	.11
C D,Shrub,St(10-20%)	1.88
C D,Shrub,Very(>20%)	47.1
C D,Grass,Ste(10-20)	.08
C D,Grass,Very(>20%)	.36

Impervious Land Use	Acres

Element Flows To:
Surface Interflow Groundwater

Name : Basin 2000
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Stee(10-20)	.01
B,Forest,Very(>20%)	.01
B,Shrub,Flat(0-5%)	.3
B,Shrub,Stee(10-20%)	.73
B,Shrub,Very S(>20%)	1.28
C D,Shrub,Flat(0-5%)	2.52
C D,Shrub,Mod(5-10%)	.1
C D,Shrub,St(10-20%)	1.04
C D,Shrub,Very(>20%)	35.42
B,Grass,Very S(>20%)	.02
C D,Grass,Flat(0-5%)	.19
C D,Grass,Mod(5-10%)	.13
C D,Grass,Very(>20%)	3.61

Impervious Land Use	Acres				
Roads,Flat(0-5%)	0.38	,Mod(5-10%)		0.89	
,VerySteе(>20%)	0.6	,Flat(0-5%)	0.14		

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 2A,	Trapezoidal Pond 2A,	

Name : Lateral Basin noncontgs sw
Bypass: No

Impervious Land Use	Acres
Sidewalks,Flat(0-5%) LAT	0.12

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin noncontgs sw,	

Name : Lateral Basin noncontgs sw
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.09

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 2A,	Trapezoidal Pond 2A,	

Name : Lateral Basin noncontgs sw
Bypass: No

Impervious Land Use	Acres
Sidewalks,Mod(5-10%) LAT	0.24

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin noncontgs sw,	

Name : Lateral Basin noncontgs sw
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Mod(5-10%)	.19

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 2A,	Trapezoidal Pond 2A,	

Name : Lateral I Basin 3
Bypass: No

Impervious Land Use	Acres
Roof Area LAT	0.91

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 3,	

Name : Lateral Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	2.03

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 2A,	Trapezoidal Pond 2A,	

Name : Basin 2
Bypass: Yes

GroundWater: No

Pervious Land Use	Acres
B,Shrub,Very S(>20%)	.01
C D,Shrub,Flat(0-5%)	.12
C D,Shrub,Mod(5-10%)	.01
C D,Shrub,St(10-20%)	.32
C D,Shrub,Very(>20%)	7.64
C D,Grass,Very(>20%)	.43

Impervious Land Use	Acres

Element Flows To:
Surface Interflow Groundwater

Name : Trapezoidal Pond 2A
Bottom Length: 63.2528204622304ft.
Bottom Width: 63.2528204622304ft.
Depth : 5ft.
Volume at riser head : 0.3699ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 36 in.
NotchType : Rectangular
Notch Width : 0.500 ft.
Notch Height: 1.046 ft.
Orifice 1 Diameter: 9.975 in. Elevation: 0 ft.

Element Flows To:
Outlet 1 Outlet 2

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.092	0.000	0.000	0.000
0.056	0.093	0.005	0.616	0.000
0.111	0.094	0.010	0.871	0.000
0.167	0.095	0.016	1.067	0.000
0.222	0.096	0.021	1.232	0.000
0.278	0.097	0.026	1.377	0.000
0.333	0.098	0.032	1.509	0.000
0.389	0.099	0.037	1.630	0.000
0.444	0.100	0.043	1.742	0.000
0.500	0.101	0.048	1.848	0.000
0.556	0.102	0.054	1.948	0.000

0.611	0.103	0.059	2.043	0.000
0.667	0.104	0.065	2.134	0.000
0.722	0.105	0.071	2.221	0.000
0.778	0.106	0.077	2.305	0.000
0.833	0.107	0.083	2.386	0.000
0.889	0.108	0.089	2.464	0.000
0.944	0.109	0.095	2.540	0.000
1.000	0.110	0.101	2.613	0.000
1.056	0.111	0.107	2.685	0.000
1.111	0.112	0.113	2.755	0.000
1.167	0.113	0.119	2.823	0.000
1.222	0.114	0.126	2.889	0.000
1.278	0.115	0.132	2.954	0.000
1.333	0.117	0.139	3.018	0.000
1.389	0.118	0.145	3.080	0.000
1.444	0.119	0.152	3.141	0.000
1.500	0.120	0.158	3.201	0.000
1.556	0.121	0.165	3.259	0.000
1.611	0.122	0.172	3.317	0.000
1.667	0.123	0.179	3.374	0.000
1.722	0.124	0.185	3.429	0.000
1.778	0.125	0.192	3.484	0.000
1.833	0.127	0.199	3.538	0.000
1.889	0.128	0.206	3.592	0.000
1.944	0.129	0.214	3.644	0.000
2.000	0.130	0.221	3.712	0.000
2.056	0.131	0.228	3.799	0.000
2.111	0.132	0.235	3.897	0.000
2.167	0.133	0.243	4.003	0.000
2.222	0.135	0.250	4.114	0.000
2.278	0.136	0.258	4.231	0.000
2.333	0.137	0.265	4.351	0.000
2.389	0.138	0.273	4.475	0.000
2.444	0.139	0.281	4.601	0.000
2.500	0.141	0.288	4.730	0.000
2.556	0.142	0.296	4.861	0.000
2.611	0.143	0.304	4.993	0.000
2.667	0.144	0.312	5.126	0.000
2.722	0.145	0.320	5.260	0.000
2.778	0.147	0.328	5.395	0.000
2.833	0.148	0.336	5.530	0.000
2.889	0.149	0.345	5.665	0.000
2.944	0.150	0.353	5.800	0.000
3.000	0.152	0.361	5.951	0.000
3.056	0.153	0.370	6.375	0.000
3.111	0.154	0.378	7.116	0.000
3.167	0.155	0.387	8.063	0.000
3.222	0.157	0.396	9.176	0.000
3.278	0.158	0.404	10.43	0.000
3.333	0.159	0.413	11.82	0.000
3.389	0.160	0.422	13.32	0.000
3.444	0.162	0.431	14.93	0.000
3.500	0.163	0.440	16.64	0.000
3.556	0.164	0.449	18.45	0.000
3.611	0.166	0.458	20.35	0.000
3.667	0.167	0.467	22.33	0.000
3.722	0.168	0.477	24.40	0.000

3.778	0.169	0.486	26.54	0.000
3.833	0.171	0.496	28.77	0.000
3.889	0.172	0.505	31.06	0.000
3.944	0.173	0.515	33.43	0.000
4.000	0.175	0.524	35.87	0.000
4.056	0.176	0.534	38.37	0.000
4.111	0.177	0.544	40.94	0.000
4.167	0.179	0.554	43.58	0.000
4.222	0.180	0.564	46.27	0.000
4.278	0.182	0.574	49.03	0.000
4.333	0.183	0.584	51.85	0.000
4.389	0.184	0.594	54.72	0.000
4.444	0.186	0.605	57.65	0.000
4.500	0.187	0.615	60.64	0.000
4.556	0.188	0.625	63.69	0.000
4.611	0.190	0.636	66.78	0.000
4.667	0.191	0.646	69.93	0.000
4.722	0.193	0.657	73.14	0.000
4.778	0.194	0.668	76.39	0.000
4.833	0.195	0.679	79.70	0.000
4.889	0.197	0.689	83.05	0.000
4.944	0.198	0.700	86.45	0.000
5.000	0.200	0.711	89.91	0.000
5.056	0.201	0.723	93.41	0.000

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	7.3051
5 year	23.12017
10 year	36.411161
25 year	43.05683

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	6.80277
5 year	22.286261
10 year	33.089017
25 year	39.391674

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	11.581	10.882
1962	0.138	1.259
1963	12.394	9.148
1964	10.358	7.703
1965	0.080	1.029
1966	6.164	5.398
1967	19.146	19.146
1968	33.445	32.916

1969	4.049	3.369
1970	27.942	27.450
1971	9.129	9.199
1972	6.802	5.603
1973	7.207	5.806
1974	9.177	6.836
1975	7.989	7.909
1976	4.749	4.430
1977	7.305	6.803
1978	0.629	1.456
1979	43.046	40.057
1980	20.532	20.584
1981	39.894	39.328
1982	5.414	4.165
1983	26.225	22.926
1984	21.028	16.566
1985	0.211	0.817
1986	17.862	12.804
1987	23.493	22.634
1988	2.291	2.253
1989	0.014	1.377
1990	0.060	0.729
1991	0.000	0.143
1992	21.777	21.034
1993	16.071	15.561
1994	40.357	33.414
1995	11.407	8.936
1996	43.172	35.060
1997	3.631	2.970
1998	2.279	2.650
1999	34.554	31.946
2000	0.051	0.512
2001	0.017	0.654
2002	0.009	0.486
2003	0.001	0.561
2004	7.007	4.297
2005	1.608	2.269

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	43.1716	40.0571
2	43.0459	39.3283
3	40.3570	35.0598
4	39.8939	33.4138
5	34.5537	32.9158
6	33.4447	31.9463
7	27.9417	27.4497
8	26.2254	22.9256
9	23.4933	22.6340
10	21.7769	21.0344
11	21.0279	20.5844
12	20.5318	19.1463
13	19.1462	16.5662
14	17.8620	15.5610
15	16.0711	12.8044
16	12.3940	10.8818

17	11.5807	9.1993
18	11.4065	9.1476
19	10.3583	8.9365
20	9.1775	7.9090
21	9.1295	7.7033
22	7.9889	6.8357
23	7.3051	6.8028
24	7.2066	5.8057
25	7.0066	5.6034
26	6.8016	5.3980
27	6.1645	4.4302
28	5.4142	4.2974
29	4.7495	4.1649
30	4.0494	3.3689
31	3.6312	2.9700
32	2.2908	2.6502
33	2.2785	2.2690
34	1.6077	2.2534
35	0.6290	1.4564
36	0.2109	1.3773
37	0.1383	1.2588
38	0.0803	1.0288
39	0.0598	0.8174
40	0.0510	0.7292
41	0.0166	0.6537
42	0.0135	0.5606
43	0.0093	0.5120
44	0.0011	0.4860
45	0.0000	0.1431

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
4.6240	516	479	92	Pass
4.9451	480	431	89	Pass
5.2662	450	392	87	Pass
5.5873	420	361	85	Pass
5.9084	393	331	84	Pass
6.2294	367	306	83	Pass
6.5505	344	289	84	Pass
6.8716	325	278	85	Pass
7.1927	305	262	85	Pass
7.5138	279	253	90	Pass
7.8349	266	243	91	Pass
8.1559	255	225	88	Pass
8.4770	240	217	90	Pass
8.7981	227	204	89	Pass
9.1192	223	197	88	Pass
9.4403	202	179	88	Pass
9.7613	184	168	91	Pass
10.0824	172	159	92	Pass
10.4035	164	147	89	Pass
10.7246	154	137	88	Pass

11.0457	148	129	87	Pass
11.3668	140	121	86	Pass
11.6878	131	116	88	Pass
12.0089	126	108	85	Pass
12.3300	123	104	84	Pass
12.6511	115	98	85	Pass
12.9722	107	92	85	Pass
13.2933	101	87	86	Pass
13.6143	93	85	91	Pass
13.9354	89	82	92	Pass
14.2565	86	80	93	Pass
14.5776	79	77	97	Pass
14.8987	76	74	97	Pass
15.2197	73	72	98	Pass
15.5408	69	69	100	Pass
15.8619	66	63	95	Pass
16.1830	64	61	95	Pass
16.5041	62	59	95	Pass
16.8252	60	53	88	Pass
17.1462	55	50	90	Pass
17.4673	54	48	88	Pass
17.7884	49	43	87	Pass
18.1095	48	40	83	Pass
18.4306	45	40	88	Pass
18.7516	45	40	88	Pass
19.0727	44	39	88	Pass
19.3938	42	36	85	Pass
19.7149	40	34	85	Pass
20.0360	39	31	79	Pass
20.3571	38	31	81	Pass
20.6781	36	27	75	Pass
20.9992	33	26	78	Pass
21.3203	31	24	77	Pass
21.6414	31	24	77	Pass
21.9625	27	24	88	Pass
22.2835	25	23	92	Pass
22.6046	23	22	95	Pass
22.9257	21	21	100	Pass
23.2468	21	17	80	Pass
23.5679	19	15	78	Pass
23.8890	18	15	83	Pass
24.2100	18	15	83	Pass
24.5311	18	15	83	Pass
24.8522	18	15	83	Pass
25.1733	17	15	88	Pass
25.4944	17	15	88	Pass
25.8155	16	15	93	Pass
26.1365	16	14	87	Pass
26.4576	14	12	85	Pass
26.7787	13	11	84	Pass
27.0998	12	10	83	Pass
27.4209	12	10	83	Pass
27.7419	11	9	81	Pass
28.0630	10	9	90	Pass
28.3841	10	9	90	Pass
28.7052	10	9	90	Pass
29.0263	10	9	90	Pass

29.3474	9	9	100	Pass
29.6684	9	9	100	Pass
29.9895	9	8	88	Pass
30.3106	9	8	88	Pass
30.6317	9	8	88	Pass
30.9528	9	8	88	Pass
31.2738	8	7	87	Pass
31.5949	7	7	100	Pass
31.9160	7	6	85	Pass
32.2371	6	5	83	Pass
32.5582	6	5	83	Pass
32.8793	6	5	83	Pass
33.2003	6	4	66	Pass
33.5214	5	3	60	Pass
33.8425	5	3	60	Pass
34.1636	5	3	60	Pass
34.4847	5	3	60	Pass
34.8058	4	3	75	Pass
35.1268	4	2	50	Pass
35.4479	4	2	50	Pass
35.7690	4	2	50	Pass
36.0901	4	2	50	Pass
36.4112	4	2	50	Pass

Drainage Basin 300/3000

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_3
Site Address:
City :
Report Date : 3/31/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 0.80
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 300
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.33
B,Forest,Mod(5-10%)	1.95
B,Forest,Stee(10-20)	7.46
B,Forest,Very(>20%)	2.72
B,Shrub,Stee(10-20%)	.01
B,Shrub,Very S(>20%)	.15
B,Grass,Mod(5-10%)	.21
B,Grass,Stee(10-20%)	.05
C D,Forest,Flat(0-5)	.49
C D,Forest,Mod(5-10)	.02
C D,Forest,St(10-20)	1.41
C D,Forest,Very(>20)	10.31
C D,Shrub,Flat(0-5%)	.63
C D,Shrub,Mod(5-10%)	.16
C D,Shrub,St(10-20%)	.72
C D,Shrub,Very(>20%)	31.82
C D,Grass,Flat(0-5%)	.03
C D,Grass,Ste(10-20)	.01

Impervious Land Use	Acres

Element Flows To:
Surface Interflow Groundwater

Name : Basin 3000
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Forest,Flat(0-5)	.26
C D,Forest,Mod(5-10)	.01
C D,Forest,St(10-20)	.25
C D,Forest,Very(>20)	5.44
B,Forest,Stee(10-20)	.01
B,Forest,Very(>20%)	.13
B,Shrub,Stee(10-20%)	.01
B,Shrub,Very S(>20%)	.02
C D,Shrub,Flat(0-5%)	.62
C D,Shrub,Mod(5-10%)	.16
C D,Shrub,St(10-20%)	.7
C D,Shrub,Very(>20%)	31.71
C D,Grass,Flat(0-5%)	.62
C D,Grass,Very(>20%)	7.5

Impervious Land Use	Acres
Roads,Flat(0-5%)	2.62
,Mod(5-10%)	1.19
,Flat(0-5%)	0.4

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 3,	Trapezoidal Pond 3,	

Name : Lateral I Basin noncontgs sw
Bypass: No

Impervious Land Use	Acres
Sidewalks,Flat(0-5%) LAT	0.72

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin noncontgs sw,	

Name : Lateral Basin noncontgs sw
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.58

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 3,	Trapezoidal Pond 3,	

Name : Lateral I Basin noncontgs sw
Bypass: No

Impervious Land Use	Acres
Sidewalks,Mod(5-10%) LAT	0.34

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin noncontgs sw,	

Name : Lateral Basin noncontgs sw
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Mod(5-10%)	.28

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 3,	Trapezoidal Pond 3,	

Name : Lateral I Basin 3
Bypass: No

Impervious Land Use	Acres
Roof Area LAT	2.5

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 3,	

Name : Lateral Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	5.57

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 3,	Trapezoidal Pond 3,	

Name : Trapezoidal Pond 3
Bottom Length: 185.876589302006ft.

Bottom Width: 185.876589302006ft.
Depth : 4ft.
Volume at riser head : 2.6386ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 48 in.
NotchType : Rectangular
Notch Width : 4.000 ft.
Notch Height: 0.601 ft.
Orifice 1 Diameter: 10.134 in. **Elevation:** 0 ft.

Element Flows To:
Outlet 1 **Outlet 2**

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.793	0.000	0.000	0.000
0.044	0.795	0.035	0.569	0.000
0.089	0.798	0.071	0.804	0.000
0.133	0.800	0.106	0.985	0.000
0.178	0.802	0.142	1.137	0.000
0.222	0.805	0.178	1.271	0.000
0.267	0.807	0.213	1.393	0.000
0.311	0.809	0.249	1.504	0.000
0.356	0.811	0.285	1.608	0.000
0.400	0.814	0.321	1.706	0.000
0.444	0.816	0.358	1.798	0.000
0.489	0.818	0.394	1.886	0.000
0.533	0.821	0.430	1.970	0.000
0.578	0.823	0.467	2.050	0.000
0.622	0.825	0.504	2.128	0.000
0.667	0.828	0.540	2.202	0.000
0.711	0.830	0.577	2.275	0.000
0.756	0.832	0.614	2.345	0.000
0.800	0.835	0.651	2.412	0.000
0.844	0.837	0.688	2.479	0.000
0.889	0.839	0.725	2.543	0.000
0.933	0.842	0.763	2.606	0.000
0.978	0.844	0.800	2.667	0.000
1.022	0.846	0.838	2.727	0.000
1.067	0.849	0.876	2.786	0.000
1.111	0.851	0.913	2.843	0.000
1.156	0.853	0.951	2.899	0.000
1.200	0.856	0.989	2.955	0.000
1.244	0.858	1.027	3.009	0.000
1.289	0.861	1.065	3.062	0.000
1.333	0.863	1.104	3.115	0.000
1.378	0.865	1.142	3.166	0.000
1.422	0.868	1.181	3.217	0.000
1.467	0.870	1.219	3.267	0.000

1.511	0.872	1.258	3.316	0.000
1.556	0.875	1.297	3.364	0.000
1.600	0.877	1.336	3.412	0.000
1.644	0.880	1.375	3.459	0.000
1.689	0.882	1.414	3.505	0.000
1.733	0.884	1.453	3.551	0.000
1.778	0.887	1.493	3.596	0.000
1.822	0.889	1.532	3.641	0.000
1.867	0.892	1.572	3.685	0.000
1.911	0.894	1.611	3.729	0.000
1.956	0.896	1.651	3.772	0.000
2.000	0.899	1.691	3.814	0.000
2.044	0.901	1.731	3.857	0.000
2.089	0.904	1.771	3.898	0.000
2.133	0.906	1.811	3.940	0.000
2.178	0.909	1.852	3.980	0.000
2.222	0.911	1.892	4.021	0.000
2.267	0.913	1.933	4.061	0.000
2.311	0.916	1.973	4.100	0.000
2.356	0.918	2.014	4.140	0.000
2.400	0.921	2.055	4.179	0.000
2.444	0.923	2.096	4.346	0.000
2.489	0.926	2.137	4.609	0.000
2.533	0.928	2.178	4.933	0.000
2.578	0.931	2.219	5.303	0.000
2.622	0.933	2.261	5.712	0.000
2.667	0.936	2.302	6.153	0.000
2.711	0.938	2.344	6.621	0.000
2.756	0.941	2.386	7.114	0.000
2.800	0.943	2.428	7.627	0.000
2.844	0.945	2.470	8.159	0.000
2.889	0.948	2.512	8.707	0.000
2.933	0.950	2.554	9.269	0.000
2.978	0.953	2.596	9.843	0.000
3.022	0.955	2.639	10.28	0.000
3.067	0.958	2.681	10.86	0.000
3.111	0.960	2.724	11.66	0.000
3.156	0.963	2.766	12.64	0.000
3.200	0.965	2.809	13.77	0.000
3.244	0.968	2.852	15.03	0.000
3.289	0.971	2.895	16.40	0.000
3.333	0.973	2.939	17.88	0.000
3.378	0.976	2.982	19.47	0.000
3.422	0.978	3.025	21.14	0.000
3.467	0.981	3.069	22.90	0.000
3.511	0.983	3.112	24.75	0.000
3.556	0.986	3.156	26.68	0.000
3.600	0.988	3.200	28.69	0.000
3.644	0.991	3.244	30.77	0.000
3.689	0.993	3.288	32.92	0.000
3.733	0.996	3.332	35.14	0.000
3.778	0.998	3.377	37.43	0.000
3.822	1.001	3.421	39.78	0.000
3.867	1.004	3.466	42.20	0.000
3.911	1.006	3.510	44.68	0.000
3.956	1.009	3.555	47.22	0.000
4.000	1.011	3.600	49.81	0.000

4.044	1.014	3.645	52.47	0.000

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	6.18733
5 year	20.887009
10 year	33.128913
25 year	39.44377

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	3.24229
5 year	17.497326
10 year	23.853191
25 year	33.119013

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	9.330	3.946
1962	0.091	1.354
1963	9.618	3.328
1964	8.871	3.979
1965	0.056	1.208
1966	4.206	2.849
1967	17.015	18.193
1968	30.938	32.479
1969	2.904	1.858
1970	25.445	29.159
1971	6.435	3.634
1972	5.429	2.811
1973	5.982	3.361
1974	7.604	3.241
1975	6.637	3.972
1976	3.785	2.720
1977	6.187	4.083
1978	0.358	1.525
1979	39.435	24.220
1980	18.725	14.993
1981	36.606	39.842
1982	3.876	2.359
1983	23.570	12.121
1984	16.158	7.042
1985	0.126	1.153
1986	14.757	3.806
1987	21.248	23.013
1988	1.521	1.448
1989	0.007	1.796
1990	0.022	1.161
1991	0.000	0.224

1992	19.586	12.675
1993	14.007	8.217
1994	36.119	21.114
1995	8.623	3.242
1996	39.533	23.657
1997	2.453	1.966
1998	1.561	1.888
1999	31.534	18.999
2000	0.039	0.795
2001	0.012	1.027
2002	0.008	0.932
2003	0.001	0.873
2004	5.042	2.358
2005	0.960	1.747

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	39.5327	39.8423
2	39.4353	32.4787
3	36.6055	29.1589
4	36.1190	24.2203
5	31.5342	23.6574
6	30.9375	23.0131
7	25.4452	21.1140
8	23.5696	18.9990
9	21.2484	18.1930
10	19.5860	14.9929
11	18.7253	12.6750
12	17.0153	12.1212
13	16.1579	8.2167
14	14.7571	7.0424
15	14.0066	4.0834
16	9.6183	3.9785
17	9.3302	3.9723
18	8.8713	3.9463
19	8.6233	3.8063
20	7.6042	3.6338
21	6.6375	3.3607
22	6.4353	3.3277
23	6.1873	3.2423
24	5.9825	3.2406
25	5.4286	2.8486
26	5.0418	2.8109
27	4.2057	2.7198
28	3.8759	2.3590
29	3.7855	2.3577
30	2.9040	1.9659
31	2.4533	1.8879
32	1.5610	1.8582
33	1.5212	1.7963
34	0.9602	1.7467
35	0.3584	1.5252
36	0.1260	1.4478
37	0.0906	1.3542
38	0.0558	1.2083
39	0.0393	1.1610

40	0.0216	1.1530
41	0.0117	1.0265
42	0.0080	0.9320
43	0.0070	0.8733
44	0.0007	0.7950
45	0.0000	0.2243

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
4.1774	483	302	62	Pass
4.4698	446	272	60	Pass
4.7623	413	256	61	Pass
5.0547	382	245	64	Pass
5.3472	353	226	64	Pass
5.6396	331	211	63	Pass
5.9320	312	197	63	Pass
6.2245	293	185	63	Pass
6.5169	277	180	64	Pass
6.8094	261	171	65	Pass
7.1018	248	159	64	Pass
7.3942	236	153	64	Pass
7.6867	225	146	64	Pass
7.9791	215	140	65	Pass
8.2716	201	129	64	Pass
8.5640	185	121	65	Pass
8.8564	171	116	67	Pass
9.1489	162	110	67	Pass
9.4413	151	105	69	Pass
9.7338	142	101	71	Pass
10.0262	134	92	68	Pass
10.3186	127	91	71	Pass
10.6111	126	88	69	Pass
10.9035	121	82	67	Pass
11.1959	114	79	69	Pass
11.4884	104	71	68	Pass
11.7808	100	69	69	Pass
12.0733	93	67	72	Pass
12.3657	88	63	71	Pass
12.6581	84	61	72	Pass
12.9506	79	59	74	Pass
13.2430	73	58	79	Pass
13.5355	70	54	77	Pass
13.8279	68	52	76	Pass
14.1203	65	51	78	Pass
14.4128	63	50	79	Pass
14.7052	60	50	83	Pass
14.9977	58	49	84	Pass
15.2901	54	46	85	Pass
15.5825	52	41	78	Pass
15.8750	49	41	83	Pass
16.1674	47	40	85	Pass
16.4599	43	38	88	Pass

16.7523	43	36	83	Pass
17.0447	42	35	83	Pass
17.3372	39	35	89	Pass
17.6296	38	33	86	Pass
17.9221	36	31	86	Pass
18.2145	35	28	80	Pass
18.5069	34	28	82	Pass
18.7994	32	26	81	Pass
19.0918	30	24	80	Pass
19.3843	28	22	78	Pass
19.6767	26	21	80	Pass
19.9691	25	21	84	Pass
20.2616	23	21	91	Pass
20.5540	22	21	95	Pass
20.8465	20	20	100	Pass
21.1389	19	19	100	Pass
21.4313	18	18	100	Pass
21.7238	18	17	94	Pass
22.0162	18	16	88	Pass
22.3087	18	16	88	Pass
22.6011	18	16	88	Pass
22.8935	17	14	82	Pass
23.1860	16	13	81	Pass
23.4784	16	12	75	Pass
23.7708	13	11	84	Pass
24.0633	13	11	84	Pass
24.3557	12	10	83	Pass
24.6482	11	10	90	Pass
24.9406	11	10	90	Pass
25.2330	11	10	90	Pass
25.5255	10	10	100	Pass
25.8179	10	8	80	Pass
26.1104	10	8	80	Pass
26.4028	9	8	88	Pass
26.6952	9	7	77	Pass
26.9877	9	7	77	Pass
27.2801	9	6	66	Pass
27.5726	9	6	66	Pass
27.8650	8	6	75	Pass
28.1574	8	6	75	Pass
28.4499	8	5	62	Pass
28.7423	7	5	71	Pass
29.0348	7	5	71	Pass
29.3272	7	4	57	Pass
29.6196	6	3	50	Pass
29.9121	6	3	50	Pass
30.2045	6	3	50	Pass
30.4970	6	3	50	Pass
30.7894	6	3	50	Pass
31.0818	5	3	60	Pass
31.3743	5	3	60	Pass
31.6667	4	3	75	Pass
31.9592	4	3	75	Pass
32.2516	4	2	50	Pass
32.5440	4	1	25	Pass
32.8365	4	1	25	Pass
33.1289	4	1	25	Pass

Drainage Basin 400/4000

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_4
Site Address:
City :
Report Date : 3/31/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 0.80
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 400
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.02
B,Forest,Mod(5-10%)	.92
B,Forest,Stee(10-20)	2.61
B,Forest,Very(>20%)	.02
B,Grass,Flat(0-5%)	.02
B,Grass,Mod(5-10%)	.02
B,Grass,Stee(10-20%)	.18
C D,Forest,Flat(0-5)	.28
C D,Forest,Mod(5-10)	.17
C D,Forest,St(10-20)	3.8
C D,Forest,Very(>20)	2.73
C D,Grass,Flat(0-5%)	.04
C D,Grass,Ste(10-20)	.26
C D,Grass,Very(>20%)	.01

Impervious Land Use	Acres

Element Flows To:
Surface Interflow Groundwater

Name : Basin 4000
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.34

C D,Grass,Mod(5-10%)	.3
C D,Grass,Very(>20%)	4.64

Impervious Land Use	Acres		
Roads,Flat(0-5%)	0.33	,Mod(5-10%)	0.74 ,Flat(0-5%) 0.2

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 4,	Trapezoidal Pond 4,	

Name : Lateral Basin noncontgs sw
Bypass: No

Impervious Land Use	Acres
Sidewalks,Flat(0-5%) LAT	0.09

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin noncontgs sw,	

Name : Lateral Basin noncontgs sw
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.07

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 4,	Trapezoidal Pond 4,	

Name : Lateral Basin noncontgs sw
Bypass: No

Impervious Land Use	Acres
Sidewalks,Mod(5-10%) LAT	0.19

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin noncontgs sw,	

Name : Lateral Basin noncontgs sw

Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Mod(5-10%)	.16

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 4,	Trapezoidal Pond 4,	

Name : Lateral Basin Roof
Bypass: No

Impervious Land Use	Acres
Roof Area LAT	1.29

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin Grass,	

Name : Lateral Basin Grass
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	2.87

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 4,	Trapezoidal Pond 4,	

Name : Trapezoidal Pond 4
Bottom Length: 107.416357630592ft.
Bottom Width: 107.416357630592ft.
Depth : 4ft.
Volume at riser head : 0.9433ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 18 in.
NotchType : Rectangular
Notch Width : 1.500 ft.
Notch Height: 0.600 ft.
Orifice 1 Diameter: 4.043 in. Elevation: 0 ft.

Element Flows To:
Outlet 1 Outlet 2

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.265	0.000	0.000	0.000
0.044	0.266	0.012	0.091	0.000
0.089	0.268	0.024	0.128	0.000
0.133	0.269	0.036	0.157	0.000
0.178	0.270	0.048	0.181	0.000
0.222	0.271	0.060	0.202	0.000
0.267	0.273	0.072	0.222	0.000
0.311	0.274	0.084	0.239	0.000
0.356	0.276	0.096	0.256	0.000
0.400	0.277	0.108	0.272	0.000
0.444	0.278	0.121	0.286	0.000
0.489	0.280	0.133	0.300	0.000
0.533	0.281	0.146	0.314	0.000
0.578	0.282	0.158	0.326	0.000
0.622	0.284	0.171	0.339	0.000
0.667	0.285	0.183	0.351	0.000
0.711	0.286	0.196	0.362	0.000
0.756	0.288	0.209	0.373	0.000
0.800	0.289	0.222	0.384	0.000
0.844	0.290	0.234	0.395	0.000
0.889	0.292	0.247	0.405	0.000
0.933	0.293	0.260	0.415	0.000
0.978	0.295	0.273	0.425	0.000
1.022	0.296	0.287	0.434	0.000
1.067	0.297	0.300	0.443	0.000
1.111	0.299	0.313	0.453	0.000
1.156	0.300	0.326	0.461	0.000
1.200	0.302	0.340	0.470	0.000
1.244	0.303	0.353	0.479	0.000
1.289	0.304	0.367	0.487	0.000
1.333	0.306	0.380	0.496	0.000
1.378	0.307	0.394	0.504	0.000
1.422	0.309	0.407	0.512	0.000
1.467	0.310	0.421	0.520	0.000
1.511	0.311	0.435	0.528	0.000
1.556	0.313	0.449	0.535	0.000
1.600	0.314	0.463	0.543	0.000
1.644	0.316	0.477	0.551	0.000
1.689	0.317	0.491	0.558	0.000
1.733	0.319	0.505	0.565	0.000
1.778	0.320	0.519	0.572	0.000
1.822	0.322	0.533	0.580	0.000
1.867	0.323	0.548	0.587	0.000
1.911	0.324	0.562	0.593	0.000
1.956	0.326	0.577	0.600	0.000
2.000	0.327	0.591	0.607	0.000
2.044	0.329	0.606	0.614	0.000
2.089	0.330	0.620	0.620	0.000
2.133	0.332	0.635	0.627	0.000

2.178	0.333	0.650	0.634	0.000
2.222	0.335	0.665	0.640	0.000
2.267	0.336	0.680	0.646	0.000
2.311	0.338	0.695	0.653	0.000
2.356	0.339	0.710	0.659	0.000
2.400	0.341	0.725	0.665	0.000
2.444	0.342	0.740	0.718	0.000
2.489	0.344	0.755	0.807	0.000
2.533	0.345	0.770	0.920	0.000
2.578	0.347	0.786	1.050	0.000
2.622	0.348	0.801	1.195	0.000
2.667	0.350	0.817	1.352	0.000
2.711	0.351	0.832	1.520	0.000
2.756	0.353	0.848	1.696	0.000
2.800	0.354	0.864	1.881	0.000
2.844	0.356	0.879	2.072	0.000
2.889	0.357	0.895	2.270	0.000
2.933	0.359	0.911	2.473	0.000
2.978	0.360	0.927	2.681	0.000
3.022	0.362	0.943	2.838	0.000
3.067	0.363	0.959	3.046	0.000
3.111	0.365	0.976	3.341	0.000
3.156	0.366	0.992	3.702	0.000
3.200	0.368	1.008	4.117	0.000
3.244	0.370	1.025	4.582	0.000
3.289	0.371	1.041	5.090	0.000
3.333	0.373	1.058	5.638	0.000
3.378	0.374	1.074	6.224	0.000
3.422	0.376	1.091	6.845	0.000
3.467	0.377	1.108	7.499	0.000
3.511	0.379	1.124	8.185	0.000
3.556	0.381	1.141	8.902	0.000
3.600	0.382	1.158	9.647	0.000
3.644	0.384	1.175	10.42	0.000
3.689	0.385	1.192	11.22	0.000
3.733	0.387	1.209	12.05	0.000
3.778	0.388	1.227	12.90	0.000
3.822	0.390	1.244	13.77	0.000
3.867	0.392	1.261	14.67	0.000
3.911	0.393	1.279	15.60	0.000
3.956	0.395	1.296	16.54	0.000
4.000	0.396	1.314	17.51	0.000
4.044	0.398	1.332	18.50	0.000

3.5

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.500723
5 year	3.326962
10 year	5.508614
25 year	6.581341

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.416976
5 year	1.445671
10 year	3.526131
25 year	5.476346

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	0.742	0.509
1962	0.005	0.250
1963	0.911	0.415
1964	0.974	0.566
1965	0.003	0.231
1966	0.123	0.396
1967	2.382	2.178
1968	5.457	5.383
1969	0.102	0.352
1970	4.214	4.563
1971	0.444	0.537
1972	0.338	0.348
1973	0.579	0.417
1974	0.818	0.394
1975	0.671	0.533
1976	0.266	0.457
1977	0.697	0.534
1978	0.015	0.305
1979	6.738	2.235
1980	3.153	1.086
1981	6.349	6.458
1982	0.172	0.381
1983	3.580	1.247
1984	1.652	0.624
1985	0.009	0.216
1986	1.478	0.466
1987	3.375	3.271
1988	0.025	0.330
1989	0.001	0.301
1990	0.002	0.231
1991	0.000	0.053
1992	3.074	0.684
1993	1.967	0.590
1994	5.606	1.716
1995	0.501	0.423
1996	6.566	4.004
1997	0.064	0.325
1998	0.046	0.322
1999	5.239	1.501
2000	0.003	0.151
2001	0.001	0.202
2002	0.001	0.202
2003	0.000	0.161
2004	0.224	0.330
2005	0.012	0.337

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	6.7381	6.4583
2	6.5664	5.3828
3	6.3493	4.5626
4	5.6055	4.0044
5	5.4569	3.2711
6	5.2388	2.2346
7	4.2140	2.1777
8	3.5805	1.7164
9	3.3753	1.5007
10	3.1530	1.2475
11	3.0743	1.0856
12	2.3823	0.6842
13	1.9668	0.6242
14	1.6522	0.5898
15	1.4783	0.5658
16	0.9742	0.5369
17	0.9111	0.5344
18	0.8180	0.5333
19	0.7422	0.5091
20	0.6972	0.4658
21	0.6712	0.4565
22	0.5790	0.4227
23	0.5007	0.4170
24	0.4437	0.4154
25	0.3379	0.3957
26	0.2664	0.3944
27	0.2239	0.3810
28	0.1723	0.3519
29	0.1234	0.3480
30	0.1015	0.3371
31	0.0636	0.3300
32	0.0461	0.3296
33	0.0254	0.3254
34	0.0150	0.3217
35	0.0117	0.3055
36	0.0087	0.3010
37	0.0051	0.2496
38	0.0029	0.2312
39	0.0027	0.2311
40	0.0021	0.2158
41	0.0013	0.2023
42	0.0012	0.2017
43	0.0006	0.1612
44	0.0001	0.1511
45	0.0000	0.0532

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
0.6654	348	218	62	Pass

0.7143	319	190	59	Pass
0.7632	294	173	58	Pass
0.8122	279	163	58	Pass
0.8611	263	154	58	Pass
0.9100	252	145	57	Pass
0.9589	242	137	56	Pass
1.0078	230	133	57	Pass
1.0568	216	127	58	Pass
1.1057	206	120	58	Pass
1.1546	196	115	58	Pass
1.2035	182	108	59	Pass
1.2524	170	104	61	Pass
1.3014	161	102	63	Pass
1.3503	151	99	65	Pass
1.3992	138	94	68	Pass
1.4481	133	86	64	Pass
1.4971	125	83	66	Pass
1.5460	118	76	64	Pass
1.5949	112	72	64	Pass
1.6438	106	68	64	Pass
1.6927	101	66	65	Pass
1.7417	95	64	67	Pass
1.7906	89	63	70	Pass
1.8395	84	62	73	Pass
1.8884	79	58	73	Pass
1.9373	75	51	68	Pass
1.9863	70	51	72	Pass
2.0352	69	49	71	Pass
2.0841	67	48	71	Pass
2.1330	65	47	72	Pass
2.1820	61	44	72	Pass
2.2309	57	42	73	Pass
2.2798	55	40	72	Pass
2.3287	53	40	75	Pass
2.3776	49	39	79	Pass
2.4266	46	36	78	Pass
2.4755	45	36	80	Pass
2.5244	43	34	79	Pass
2.5733	42	33	78	Pass
2.6222	41	33	80	Pass
2.6712	40	30	75	Pass
2.7201	39	29	74	Pass
2.7690	38	23	60	Pass
2.8179	36	23	63	Pass
2.8669	36	23	63	Pass
2.9158	35	22	62	Pass
2.9647	34	22	64	Pass
3.0136	34	21	61	Pass
3.0625	34	20	58	Pass
3.1115	32	19	59	Pass
3.1604	30	19	63	Pass
3.2093	27	17	62	Pass
3.2582	26	17	65	Pass
3.3071	25	16	64	Pass
3.3561	23	15	65	Pass
3.4050	21	14	66	Pass
3.4539	21	14	66	Pass

Drainage Basin 700/7000
(Combined 700A and B and 7000A and B)

San Diego Hydrology Model
PROJECT REPORT

Project Name: basin_7AB
Site Address:
City :
Report Date : 8/11/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 1.00
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin7A (pre)
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	4.52
B,Forest,Mod(5-10%)	18.53
B,Forest,Stee(10-20)	20.78
B,Forest,Very(>20%)	5.48
B,Grass,Flat(0-5%)	2.4
B,Grass,Mod(5-10%)	2.54
B,Grass,Stee(10-20%)	1.9
B,Dirt, Flat(0-5%)	.13
C D,Forest,Flat(0-5)	5.59
C D,Forest,Mod(5-10)	3.67
C D,Forest,St(10-20)	34.93
C D,Forest,Very(>20)	80.5
C D,Shrub,Flat(0-5%)	1.19
C D,Shrub,Mod(5-10%)	.04
C D,Shrub,St(10-20%)	1.08
C D,Shrub,Very(>20%)	8.92
C D,Grass,Mod(5-10%)	.02
C D,Grass,Ste(10-20)	.01

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Forest,Flat(0-5)	4.28
C D,Forest,Mod(5-10)	.23
C D,Forest,St(10-20)	2.86
C D,Forest,Very(>20)	45.06
C D,Shrub,Flat(0-5%)	.95
C D,Shrub,Mod(5-10%)	.05
C D,Shrub,St(10-20%)	1.02
C D,Shrub,Very(>20%)	9.08
C D,Grass,Flat(0-5%)	7.41
C D,Grass,Mod(5-10%)	.01
C D,Grass,Ste(10-20)	1.45
C D,Grass,Very(>20%)	39.78

Impervious Land Use	Acres				
Roads,Flat(0-5%)	15.36	,Mod(5-10%)	4.73	,Steep(10-20%)	1.99
,VeryStee(>20%)	1.89	,Flat(0-5%)	1.65		

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Lateral I Basin Noncontig Sidewalks
Bypass: No

Impervious Land Use		Acres
Sidewalks,Flat(0-5%)	LAT	2.04

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 1 Noncontig Sidewalks,	

Name : Lateral Basin 1 Noncontig Sidewalks
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	1.52

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Lateral I Basin 2 Noncontig Sidewalks
Bypass: No

Impervious Land Use		Acres
Sidewalks,Mod(5-10%)	LAT	1.09

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 2,	

Name : Lateral Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Mod(5-10%)	.9

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Lateral I Basin 3 Noncontig Sidewalks
Bypass: No

Impervious Land Use		Acres
Sidewalks,St(10-20%)	LAT	0.45

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 3,	

Name : Lateral Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Ste(10-20)	.45

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Lateral I Basin 4 Roof
Bypass: No

Impervious Land Use	Acres

Roof Area LAT **19.11**

Element Flows To:
Outlet 1 **Outlet 2**
Lateral Basin 4,

Name : Lateral Basin 4
Bypass: No

GroundWater: No

Pervious Land Use	**Acres**
C D,Grass,Flat(0-5%)	31.54

Element Flows To:

Surface	**Interflow**	**Groundwater**
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Trapezoidal Pond 1
Bottom Length: 348.695687717423ft.
Bottom Width: 348.695687717423ft.
Depth : 5ft.
Volume at riser head : 12.1286ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 96 in.
NotchType : Rectangular
Notch Width : 7.940 ft.
Notch Height: 0.835 ft.
Orifice 1 Diameter: 16.730027638 in. **Elevation:** 0 ft.

Element Flows To:
Outlet 1 **Outlet 2**

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	2.791	0.000	0.000	0.000
0.056	2.797	0.155	1.733	0.000
0.111	2.802	0.311	2.450	0.000
0.167	2.807	0.467	3.001	0.000
0.222	2.813	0.623	3.465	0.000
0.278	2.818	0.779	3.874	0.000
0.333	2.823	0.936	4.244	0.000
0.389	2.829	1.093	4.584	0.000

0.444	2.834	1.250	4.901	0.000
0.500	2.840	1.408	5.198	0.000
0.556	2.845	1.566	5.479	0.000
0.611	2.850	1.724	5.747	0.000
0.667	2.856	1.882	6.002	0.000
0.722	2.861	2.041	6.247	0.000
0.778	2.867	2.200	6.483	0.000
0.833	2.872	2.360	6.711	0.000
0.889	2.877	2.519	6.931	0.000
0.944	2.883	2.679	7.144	0.000
1.000	2.888	2.840	7.351	0.000
1.056	2.894	3.000	7.553	0.000
1.111	2.899	3.161	7.749	0.000
1.167	2.904	3.322	7.940	0.000
1.222	2.910	3.484	8.127	0.000
1.278	2.915	3.646	8.310	0.000
1.333	2.921	3.808	8.488	0.000
1.389	2.926	3.970	8.663	0.000
1.444	2.932	4.133	8.835	0.000
1.500	2.937	4.296	9.003	0.000
1.556	2.943	4.459	9.168	0.000
1.611	2.948	4.623	9.331	0.000
1.667	2.954	4.787	9.490	0.000
1.722	2.959	4.951	9.647	0.000
1.778	2.965	5.116	9.801	0.000
1.833	2.970	5.281	9.953	0.000
1.889	2.976	5.446	10.10	0.000
1.944	2.981	5.611	10.25	0.000
2.000	2.987	5.777	10.40	0.000
2.056	2.992	5.943	10.54	0.000
2.111	2.998	6.109	10.68	0.000
2.167	3.003	6.276	10.82	0.000
2.222	3.009	6.443	10.96	0.000
2.278	3.014	6.610	11.09	0.000
2.333	3.020	6.778	11.23	0.000
2.389	3.025	6.946	11.36	0.000
2.444	3.031	7.114	11.49	0.000
2.500	3.037	7.283	11.62	0.000
2.556	3.042	7.452	11.75	0.000
2.611	3.048	7.621	11.88	0.000
2.667	3.053	7.790	12.00	0.000
2.722	3.059	7.960	12.13	0.000
2.778	3.065	8.130	12.25	0.000
2.833	3.070	8.300	12.37	0.000
2.889	3.076	8.471	12.49	0.000
2.944	3.081	8.642	12.61	0.000
3.000	3.087	8.814	12.73	0.000
3.056	3.093	8.985	12.85	0.000
3.111	3.098	9.157	12.97	0.000
3.167	3.104	9.329	13.08	0.000
3.222	3.109	9.502	13.55	0.000
3.278	3.115	9.675	14.29	0.000
3.333	3.121	9.848	15.19	0.000
3.389	3.126	10.02	16.21	0.000
3.444	3.132	10.20	17.33	0.000
3.500	3.138	10.37	18.54	0.000
3.556	3.143	10.54	19.81	0.000

3.611	3.149	10.72	21.14	0.000
3.667	3.155	10.89	22.53	0.000
3.722	3.160	11.07	23.95	0.000
3.778	3.166	11.25	25.42	0.000
3.833	3.172	11.42	26.91	0.000
3.889	3.177	11.60	28.42	0.000
3.944	3.183	11.77	29.96	0.000
4.000	3.189	11.95	31.51	0.000
4.056	3.194	12.13	32.63	0.000
4.111	3.200	12.31	34.60	0.000
4.167	3.206	12.48	37.11	0.000
4.222	3.212	12.66	40.07	0.000
4.278	3.217	12.84	43.42	0.000
4.333	3.223	13.02	47.10	0.000
4.389	3.229	13.20	51.10	0.000
4.444	3.235	13.38	55.39	0.000
4.500	3.240	13.56	59.95	0.000
4.556	3.246	13.74	64.76	0.000
4.611	3.252	13.92	69.81	0.000
4.667	3.258	14.10	75.10	0.000
4.722	3.263	14.28	80.60	0.000
4.778	3.269	14.46	86.32	0.000
4.833	3.275	14.64	92.24	0.000
4.889	3.281	14.83	98.35	0.000
4.944	3.286	15.01	104.7	0.000
5.000	3.292	15.19	111.2	0.000
5.056	3.298	15.37	117.8	0.000

Name : Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.43
B,Forest,Mod(5-10%)	1.05
B,Forest,Stee(10-20)	.78
B,Forest,Very(>20%)	.08
B,Shrub,Flat(0-5%)	.14
B,Shrub,Mod(5-10%)	.42
B,Shrub,Stee(10-20%)	.31
B,Shrub,Very S(>20%)	1.58
B,Grass,Flat(0-5%)	5.2
B,Grass,Mod(5-10%)	5.36
B,Grass,Stee(10-20%)	3.63
B,Grass,Very S(>20%)	.65
C D,Forest,Flat(0-5)	.1
C D,Forest,Mod(5-10)	.03
C D,Forest,St(10-20)	.16
C D,Forest,Very(>20)	10.13
C D,Shrub,Flat(0-5%)	.38
C D,Shrub,Mod(5-10%)	.04
C D,Shrub,St(10-20%)	.41
C D,Shrub,Very(>20%)	12.56
C D,Grass,Flat(0-5%)	.03
C D,Grass,Mod(5-10%)	.08

C D,Grass,Ste(10-20)	.18
C D,Grass,Very(>20%)	.04

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater

Name : Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Forest,Flat(0-5)	.1
C D,Forest,Mod(5-10)	.03
C D,Forest,St(10-20)	.15
C D,Forest,Very(>20)	10.13
B,Shrub,Flat(0-5%)	.14
B,Shrub,Mod(5-10%)	.42
B,Shrub,Stee(10-20%)	.31
B,Shrub,Very S(>20%)	1.58
C D,Shrub,Flat(0-5%)	.38
C D,Shrub,Mod(5-10%)	.04
C D,Shrub,St(10-20%)	.41
C D,Shrub,Very(>20%)	12.56
B,Grass,Flat(0-5%)	.09
B,Grass,Mod(5-10%)	.59
B,Grass,Stee(10-20%)	.28
B,Grass,Very S(>20%)	.04
C D,Grass,Flat(0-5%)	8.51
C D,Grass,Mod(5-10%)	.07
C D,Grass,Ste(10-20)	.09
C D,Grass,Very(>20%)	2.35

Impervious Land Use	Acres	
Roads,Flat(0-5%)	2.77 Area	3.1

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 2,	Trapezoidal Pond 2,	

Name : Lateral I Basin Noncontig Sidewalks
Bypass: No

Impervious Land Use	Acres
Sidewalks,Flat(0-5%) LAT	0.73

Element Flows To:
Outlet 1 **Outlet 2**
Lateral Basin 5,

Name : Lateral Basin 5
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.43

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 2,	Trapezoidal Pond 2,	

Name : Trapezoidal Pond 2
Bottom Length: 177.49005235115ft.
Bottom Width: 177.49005235115ft.
Depth : 5ft.
Volume at riser head : 3.3535ft.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 48 in.
NotchType : Rectangular
Notch Width : 4.000 ft.
Notch Height: 0.840 ft.
Orifice 1 Diameter: 7.508 in. **Elevation:** 0 ft.

Element Flows To:
Outlet 1 **Outlet 2**

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.723	0.000	0.000	0.000
0.056	0.726	0.040	0.349	0.000
0.111	0.729	0.081	0.493	0.000
0.167	0.731	0.121	0.604	0.000
0.222	0.734	0.162	0.698	0.000
0.278	0.737	0.203	0.780	0.000
0.333	0.740	0.244	0.855	0.000
0.389	0.742	0.285	0.923	0.000
0.444	0.745	0.326	0.987	0.000
0.500	0.748	0.368	1.047	0.000

0.556	0.751	0.409	1.103	0.000
0.611	0.753	0.451	1.157	0.000
0.667	0.756	0.493	1.209	0.000
0.722	0.759	0.535	1.258	0.000
0.778	0.762	0.577	1.306	0.000
0.833	0.765	0.620	1.352	0.000
0.889	0.767	0.662	1.396	0.000
0.944	0.770	0.705	1.439	0.000
1.000	0.773	0.748	1.480	0.000
1.056	0.776	0.791	1.521	0.000
1.111	0.779	0.834	1.561	0.000
1.167	0.781	0.877	1.599	0.000
1.222	0.784	0.921	1.637	0.000
1.278	0.787	0.965	1.674	0.000
1.333	0.790	1.008	1.710	0.000
1.389	0.793	1.052	1.745	0.000
1.444	0.796	1.096	1.779	0.000
1.500	0.798	1.141	1.813	0.000
1.556	0.801	1.185	1.847	0.000
1.611	0.804	1.230	1.879	0.000
1.667	0.807	1.275	1.911	0.000
1.722	0.810	1.319	1.943	0.000
1.778	0.813	1.365	1.974	0.000
1.833	0.816	1.410	2.005	0.000
1.889	0.819	1.455	2.035	0.000
1.944	0.821	1.501	2.064	0.000
2.000	0.824	1.546	2.094	0.000
2.056	0.827	1.592	2.123	0.000
2.111	0.830	1.638	2.151	0.000
2.167	0.833	1.685	2.179	0.000
2.222	0.836	1.731	2.207	0.000
2.278	0.839	1.777	2.234	0.000
2.333	0.842	1.824	2.261	0.000
2.389	0.845	1.871	2.288	0.000
2.444	0.848	1.918	2.315	0.000
2.500	0.851	1.965	2.341	0.000
2.556	0.854	2.012	2.367	0.000
2.611	0.857	2.060	2.392	0.000
2.667	0.859	2.108	2.418	0.000
2.722	0.862	2.155	2.443	0.000
2.778	0.865	2.203	2.467	0.000
2.833	0.868	2.252	2.492	0.000
2.889	0.871	2.300	2.516	0.000
2.944	0.874	2.348	2.540	0.000
3.000	0.877	2.397	2.564	0.000
3.056	0.880	2.446	2.588	0.000
3.111	0.883	2.495	2.611	0.000
3.167	0.886	2.544	2.642	0.000
3.222	0.889	2.593	2.864	0.000
3.278	0.892	2.643	3.209	0.000
3.333	0.895	2.693	3.634	0.000
3.389	0.898	2.742	4.121	0.000
3.444	0.901	2.792	4.657	0.000
3.500	0.904	2.843	5.235	0.000
3.556	0.908	2.893	5.848	0.000
3.611	0.911	2.943	6.490	0.000
3.667	0.914	2.994	7.157	0.000

3.722	0.917	3.045	7.845	0.000
3.778	0.920	3.096	8.551	0.000
3.833	0.923	3.147	9.272	0.000
3.889	0.926	3.198	10.01	0.000
3.944	0.929	3.250	10.75	0.000
4.000	0.932	3.302	11.50	0.000
4.056	0.935	3.353	12.03	0.000
4.111	0.938	3.406	12.98	0.000
4.167	0.941	3.458	14.21	0.000
4.222	0.944	3.510	15.66	0.000
4.278	0.947	3.563	17.30	0.000
4.333	0.951	3.615	19.12	0.000
4.389	0.954	3.668	21.09	0.000
4.444	0.957	3.721	23.20	0.000
4.500	0.960	3.775	25.45	0.000
4.556	0.963	3.828	27.83	0.000
4.611	0.966	3.882	30.33	0.000
4.667	0.969	3.935	32.94	0.000
4.722	0.973	3.989	35.66	0.000
4.778	0.976	4.043	38.49	0.000
4.833	0.979	4.098	41.43	0.000
4.889	0.982	4.152	44.46	0.000
4.944	0.985	4.207	47.58	0.000
5.000	0.988	4.262	50.80	0.000
5.056	0.992	4.317	54.11	0.000

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	13.2122
5 year	59.074635
10 year	96.446761
25 year	116.502435

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	4.13363
5 year	7.719007
10 year	10.206928
25 year	47.221848

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	18.431	4.877
1962	0.132	2.777
1963	18.957	4.460
1964	20.912	6.773
1965	0.074	2.867
1966	3.880	3.697
1967	44.786	9.213

1968	93.825	73.576
1969	3.420	3.902
1970	74.417	11.014
1971	10.785	5.366
1972	9.956	3.645
1973	13.212	4.251
1974	17.194	3.954
1975	14.613	5.942
1976	7.267	4.127
1977	14.564	5.760
1978	0.388	3.733
1979	118.922	9.776
1980	55.267	7.231
1981	110.912	44.712
1982	5.012	4.012
1983	65.127	7.632
1984	31.918	5.949
1985	0.216	2.593
1986	31.259	5.218
1987	60.103	8.858
1988	1.045	3.592
1989	0.013	3.270
1990	0.038	2.896
1991	0.000	0.728
1992	55.374	7.284
1993	36.225	5.703
1994	101.362	8.531
1995	13.482	3.914
1996	116.272	43.279
1997	2.245	3.471
1998	1.654	4.134
1999	92.540	7.743
2000	0.068	2.364
2001	0.022	2.723
2002	0.022	2.755
2003	0.002	1.809
2004	6.263	3.919
2005	0.418	3.368

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	118.9220	73.5763
2	116.2720	44.7119
3	110.9120	43.2794
4	101.3620	11.0143
5	93.8253	9.7763
6	92.5398	9.2133
7	74.4165	8.8575
8	65.1274	8.5311
9	60.1027	7.7431
10	55.3736	7.6323
11	55.2667	7.2835
12	44.7858	7.2311
13	36.2252	6.7726
14	31.9181	5.9491
15	31.2592	5.9422

16	20.9116	5.7600
17	18.9567	5.7034
18	18.4314	5.3664
19	17.1935	5.2176
20	14.6132	4.8767
21	14.5641	4.4603
22	13.4823	4.2508
23	13.2122	4.1336
24	10.7850	4.1270
25	9.9564	4.0124
26	7.2674	3.9538
27	6.2634	3.9189
28	5.0118	3.9136
29	3.8799	3.9019
30	3.4203	3.7328
31	2.2447	3.6965
32	1.6540	3.6445
33	1.0452	3.5915
34	0.4178	3.4709
35	0.3882	3.3681
36	0.2164	3.2697
37	0.1325	2.8955
38	0.0743	2.8669
39	0.0681	2.7775
40	0.0380	2.7551
41	0.0224	2.7227
42	0.0224	2.5930
43	0.0134	2.3639
44	0.0016	1.8087
45	0.0000	0.7280

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
11.8149	403	356	88	Pass
12.6698	370	327	88	Pass
13.5247	339	300	88	Pass
14.3795	318	278	87	Pass
15.2344	294	253	86	Pass
16.0893	277	239	86	Pass
16.9441	267	222	83	Pass
17.7990	253	200	79	Pass
18.6539	242	188	77	Pass
19.5087	227	176	77	Pass
20.3636	220	167	75	Pass
21.2185	207	162	78	Pass
22.0733	192	149	77	Pass
22.9282	182	141	77	Pass
23.7831	171	135	78	Pass
24.6379	158	128	81	Pass
25.4928	150	119	79	Pass
26.3477	145	116	80	Pass
27.2025	133	107	80	Pass

28.0574	127	99	77	Pass
28.9123	118	92	77	Pass
29.7671	114	88	77	Pass
30.6220	107	85	79	Pass
31.4769	99	85	85	Pass
32.3317	90	82	91	Pass
33.1866	88	78	88	Pass
34.0415	82	77	93	Pass
34.8963	77	72	93	Pass
35.7512	75	67	89	Pass
36.6061	70	64	91	Pass
37.4609	67	63	94	Pass
38.3158	65	63	96	Pass
39.1707	59	59	100	Pass
40.0255	58	55	94	Pass
40.8804	55	51	92	Pass
41.7353	53	49	92	Pass
42.5901	52	47	90	Pass
43.4450	48	43	89	Pass
44.2999	46	41	89	Pass
45.1547	43	38	88	Pass
46.0096	41	36	87	Pass
46.8645	41	35	85	Pass
47.7193	40	33	82	Pass
48.5742	40	32	80	Pass
49.4291	38	31	81	Pass
50.2839	36	29	80	Pass
51.1388	36	26	72	Pass
51.9937	35	25	71	Pass
52.8485	35	24	68	Pass
53.7034	34	23	67	Pass
54.5583	34	23	67	Pass
55.4131	29	23	79	Pass
56.2680	28	22	78	Pass
57.1229	26	19	73	Pass
57.9777	25	17	68	Pass
58.8326	24	17	70	Pass
59.6875	22	17	77	Pass
60.5423	21	16	76	Pass
61.3972	20	15	75	Pass
62.2521	19	13	68	Pass
63.1069	17	12	70	Pass
63.9618	17	10	58	Pass
64.8167	17	9	52	Pass
65.6715	14	9	64	Pass
66.5264	13	9	69	Pass
67.3813	12	9	75	Pass
68.2361	11	9	81	Pass
69.0910	11	6	54	Pass
69.9459	11	6	54	Pass
70.8008	11	6	54	Pass
71.6556	11	6	54	Pass
72.5105	11	5	45	Pass
73.3654	11	5	45	Pass
74.2202	11	5	45	Pass
75.0751	8	5	62	Pass
75.9300	8	3	37	Pass

76.7848	8	3	37	Pass
77.6397	8	3	37	Pass
78.4946	8	3	37	Pass
79.3494	8	3	37	Pass
80.2043	8	2	25	Pass
81.0592	8	2	25	Pass
81.9140	8	2	25	Pass
82.7689	7	2	28	Pass
83.6238	7	2	28	Pass
84.4786	7	2	28	Pass
85.3335	7	2	28	Pass
86.1884	7	1	14	Pass
87.0432	7	1	14	Pass
87.8981	7	1	14	Pass
88.7530	6	1	16	Pass
89.6078	6	1	16	Pass
90.4627	6	1	16	Pass
91.3176	6	1	16	Pass
92.1724	6	1	16	Pass
93.0273	5	1	20	Pass
93.8822	4	1	25	Pass
94.7370	4	1	25	Pass
95.5919	4	0	0	Pass
96.4468	4	0	0	Pass

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	Flow(cfs)
2 year	3.45155
5 year	13.155639
10 year	21.898157
25 year	26.465235

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	Flow(cfs)
2 year	1.5881
5 year	6.816354
10 year	13.391883
25 year	21.501283

Yearly Peaks for Predeveloped and Mitigated. POC #2

Year	Predeveloped	Mitigated
1961	5.317	1.956
1962	0.083	1.044
1963	5.352	1.588
1964	5.061	2.290
1965	0.043	0.985
1966	2.223	1.360
1967	10.271	7.627
1968	20.667	21.011
1969	1.510	1.246
1970	16.471	18.360
1971	3.452	1.825
1972	2.996	1.390
1973	3.406	1.719
1974	4.394	1.605
1975	3.800	2.126
1976	2.192	1.426
1977	3.585	2.154
1978	0.341	1.150

1979	26.762	11.027
1980	12.058	4.997
1981	24.682	26.655
1982	2.023	1.286
1983	14.914	5.096
1984	9.278	2.270
1985	0.105	0.849
1986	8.620	1.886
1987	13.393	12.096
1988	0.753	1.100
1989	0.010	1.293
1990	0.058	0.993
1991	0.000	0.235
1992	12.302	3.569
1993	8.337	2.407
1994	24.026	8.617
1995	4.739	1.583
1996	26.437	15.821
1997	1.322	1.079
1998	0.809	1.299
1999	20.763	7.294
2000	0.025	0.647
2001	0.008	0.862
2002	0.005	0.869
2003	0.001	0.691
2004	2.655	1.121
2005	0.563	1.123

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	26.7617	26.6545
2	26.4370	21.0105
3	24.6818	18.3598
4	24.0262	15.8211
5	20.7632	12.0963
6	20.6665	11.0274
7	16.4705	8.6173
8	14.9138	7.6267
9	13.3929	7.2944
10	12.3015	5.0956
11	12.0580	4.9965
12	10.2708	3.5695
13	9.2780	2.4071
14	8.6204	2.2903
15	8.3366	2.2701
16	5.3518	2.1541
17	5.3173	2.1264
18	5.0607	1.9560
19	4.7393	1.8861
20	4.3935	1.8248
21	3.8004	1.7193
22	3.5855	1.6047
23	3.4516	1.5881
24	3.4059	1.5828
25	2.9959	1.4263
26	2.6550	1.3896
27	2.2225	1.3599
28	2.1921	1.2994
29	2.0231	1.2926
30	1.5096	1.2865
31	1.3221	1.2457
32	0.8092	1.1497
33	0.7533	1.1233
34	0.5632	1.1213
35	0.3409	1.1004
36	0.1053	1.0790
37	0.0831	1.0443
38	0.0577	0.9928
39	0.0433	0.9853
40	0.0247	0.8690

41	0.0099	0.8616
42	0.0076	0.8493
43	0.0048	0.6906
44	0.0011	0.6470
45	0.0000	0.2348

POC #2
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
2.6311	452	228	50	Pass
2.8257	407	206	50	Pass
3.0204	375	183	48	Pass
3.2150	345	167	48	Pass
3.4096	319	161	50	Pass
3.6042	296	152	51	Pass
3.7988	283	148	52	Pass
3.9934	271	140	51	Pass
4.1881	253	134	52	Pass
4.3827	244	129	52	Pass
4.5773	233	123	52	Pass
4.7719	218	116	53	Pass
4.9665	204	111	54	Pass
5.1611	188	106	56	Pass
5.3558	171	101	59	Pass
5.5504	157	91	57	Pass
5.7450	154	87	56	Pass
5.9396	145	84	57	Pass
6.1342	141	78	55	Pass
6.3288	128	74	57	Pass
6.5235	121	72	59	Pass
6.7181	118	70	59	Pass
6.9127	112	69	61	Pass
7.1073	104	66	63	Pass
7.3019	97	62	63	Pass
7.4965	93	60	64	Pass
7.6912	85	55	64	Pass
7.8858	82	52	63	Pass
8.0804	77	49	63	Pass
8.2750	75	49	65	Pass
8.4696	68	48	70	Pass
8.6642	63	47	74	Pass
8.8589	63	40	63	Pass
9.0535	59	38	64	Pass
9.2481	57	37	64	Pass
9.4427	54	36	66	Pass
9.6373	52	35	67	Pass
9.8319	49	34	69	Pass
10.0266	46	34	73	Pass
10.2212	43	33	76	Pass
10.4158	40	32	80	Pass
10.6104	39	31	79	Pass
10.8050	39	29	74	Pass
10.9996	38	27	71	Pass
11.1943	37	23	62	Pass

11.3889	37	22	59	Pass
11.5835	37	22	59	Pass
11.7781	34	22	64	Pass
11.9727	33	20	60	Pass
12.1673	30	19	63	Pass
12.3620	28	18	64	Pass
12.5566	26	17	65	Pass
12.7512	26	16	61	Pass
12.9458	25	16	64	Pass
13.1404	24	16	66	Pass
13.3350	22	15	68	Pass
13.5296	19	15	78	Pass
13.7243	19	15	78	Pass
13.9189	18	15	83	Pass
14.1135	18	14	77	Pass
14.3081	18	14	77	Pass
14.5027	17	13	76	Pass
14.6973	17	13	76	Pass
14.8920	16	13	81	Pass
15.0866	13	12	92	Pass
15.2812	12	12	100	Pass
15.4758	11	11	100	Pass
15.6704	11	11	100	Pass
15.8650	11	9	81	Pass
16.0597	11	9	81	Pass
16.2543	11	9	81	Pass
16.4489	11	9	81	Pass
16.6435	10	9	90	Pass
16.8381	10	8	80	Pass
17.0327	9	8	88	Pass
17.2274	9	8	88	Pass
17.4220	8	8	100	Pass
17.6166	8	8	100	Pass
17.8112	8	7	87	Pass
18.0058	8	7	87	Pass
18.2004	8	7	87	Pass
18.3951	8	5	62	Pass
18.5897	8	5	62	Pass
18.7843	7	4	57	Pass
18.9789	7	4	57	Pass
19.1735	7	4	57	Pass
19.3681	7	4	57	Pass
19.5628	7	4	57	Pass
19.7574	6	4	66	Pass
19.9520	6	4	66	Pass
20.1466	6	4	66	Pass
20.3412	6	3	50	Pass
20.5358	6	3	50	Pass
20.7305	5	3	60	Pass
20.9251	4	3	75	Pass
21.1197	4	2	50	Pass
21.3143	4	1	25	Pass
21.5089	4	1	25	Pass
21.7035	4	1	25	Pass
21.8982	4	1	25	Pass

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Drainage Basin 800A/8000A

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_8A
Site Address:
City :
Report Date : 4/1/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 0.80
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.21
B,Shrub,Flat(0-5%)	.06
B,Shrub,Mod(5-10%)	.1
B,Shrub,Stee(10-20%)	.11
B,Shrub,Very S(>20%)	1.66
B,Grass,Flat(0-5%)	8.42
B,Grass,Mod(5-10%)	.7
B,Grass,Stee(10-20%)	.8
B,Grass,Very S(>20%)	.1
C D,Forest,Flat(0-5)	.02
C D,Forest,Mod(5-10)	.01
C D,Forest,St(10-20)	.09
C D,Forest,Very(>20)	3.96
C D,Shrub,Flat(0-5%)	.13
C D,Shrub,Mod(5-10%)	.01
C D,Shrub,St(10-20%)	.18
C D,Shrub,Very(>20%)	9.71
C D,Grass,Flat(0-5%)	.37
C D,Grass,Mod(5-10%)	.64
C D,Grass,Ste(10-20)	.51
C D,Grass,Very(>20%)	.08

Impervious Land Use	Acres

Element Flows To:

Surface	Interflow	Groundwater

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Forest,Flat(0-5)	.01
C D,Forest,St(10-20)	.08
C D,Forest,Very(>20)	2.66
B,Shrub,Flat(0-5%)	.05
B,Shrub,Mod(5-10%)	.09
B,Shrub,Stee(10-20%)	.05
B,Shrub,Very S(>20%)	1.66
C D,Shrub,Flat(0-5%)	.11
C D,Shrub,St(10-20%)	.13
C D,Shrub,Very(>20%)	7.77
B,Grass,Flat(0-5%)	.02
B,Grass,Mod(5-10%)	.14
B,Grass,Stee(10-20%)	.02
B,Grass,Very S(>20%)	.01
C D,Grass,Flat(0-5%)	2.4
C D,Grass,Mod(5-10%)	.12
C D,Grass,Very(>20%)	.48

Impervious Land Use	Acres
Roads,Flat(0-5%)	5.22

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Lateral I Basin 1
Bypass: No

Impervious Land Use	Acres
Sidewalks,Flat(0-5%) LAT	0.48

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 1,	

Name : Lateral Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.66

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.36

Impervious Land Use	Acres
Driveways,Flat(0-5%)	0.12

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1,	Gravel Trench Bed 1,	

Name : Gravel Trench Bed 1
Bottom Length: 14ft.
Bottom Width : 850ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 0 To 1
Trench right side slope 2: 0 To 1
Material thickness of first layer : 0.46
Pour Space of material for first layer : 0.15
Material thickness of second layer : 0.08
Pour Space of material for second layer : 0.38
Material thickness of third layer : 3
Pour Space of material for third layer : 0.38
Infiltration On
Infiltration rate : 1
Infiltration saftey factor : 0.5
Wetted surface area On
Discharge Structure
Riser Height: 3.54 ft.
Riser Diameter: 3247 in.

Element Flows To:

Outlet 1	Outlet 2
Trapezoidal Pond 1,	

Gravel Trench Bed Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.273	0.000	0.000	0.000
0.045	0.273	0.002	0.000	0.139

0.090	0.273	0.004	0.000	0.140
0.135	0.273	0.006	0.000	0.140
0.180	0.273	0.007	0.000	0.141
0.224	0.273	0.009	0.000	0.142
0.269	0.273	0.011	0.000	0.143
0.314	0.273	0.013	0.000	0.144
0.359	0.273	0.015	0.000	0.145
0.404	0.273	0.017	0.000	0.146
0.449	0.273	0.018	0.000	0.147
0.494	0.273	0.023	0.000	0.148
0.539	0.273	0.028	0.000	0.149
0.584	0.273	0.032	0.000	0.149
0.628	0.273	0.037	0.000	0.150
0.673	0.273	0.042	0.000	0.151
0.718	0.273	0.046	0.000	0.152
0.763	0.273	0.051	0.000	0.153
0.808	0.274	0.056	0.000	0.154
0.853	0.274	0.060	0.000	0.155
0.898	0.274	0.065	0.000	0.156
0.943	0.274	0.070	0.000	0.157
0.988	0.274	0.074	0.000	0.157
1.032	0.274	0.079	0.000	0.158
1.077	0.274	0.084	0.000	0.159
1.122	0.274	0.088	0.000	0.160
1.167	0.274	0.093	0.000	0.161
1.212	0.274	0.098	0.000	0.162
1.257	0.274	0.102	0.000	0.163
1.302	0.274	0.107	0.000	0.164
1.347	0.274	0.112	0.000	0.165
1.392	0.274	0.116	0.000	0.166
1.436	0.274	0.121	0.000	0.166
1.481	0.274	0.126	0.000	0.167
1.526	0.274	0.130	0.000	0.168
1.571	0.274	0.135	0.000	0.169
1.616	0.274	0.140	0.000	0.170
1.661	0.274	0.144	0.000	0.171
1.706	0.274	0.149	0.000	0.172
1.751	0.274	0.154	0.000	0.173
1.796	0.274	0.158	0.000	0.174
1.840	0.274	0.163	0.000	0.175
1.885	0.274	0.168	0.000	0.175
1.930	0.274	0.172	0.000	0.176
1.975	0.274	0.177	0.000	0.177
2.020	0.274	0.182	0.000	0.178
2.065	0.274	0.186	0.000	0.179
2.110	0.274	0.191	0.000	0.180
2.155	0.274	0.196	0.000	0.181
2.200	0.274	0.200	0.000	0.182
2.244	0.274	0.205	0.000	0.183
2.289	0.274	0.210	0.000	0.184
2.334	0.274	0.215	0.000	0.184
2.379	0.274	0.219	0.000	0.185
2.424	0.274	0.224	0.000	0.186
2.469	0.274	0.229	0.000	0.187
2.514	0.274	0.233	0.000	0.188
2.559	0.274	0.238	0.000	0.189
2.604	0.274	0.243	0.000	0.190

2.648	0.274	0.247	0.000	0.191
2.693	0.274	0.252	0.000	0.192
2.738	0.274	0.257	0.000	0.192
2.783	0.274	0.261	0.000	0.193
2.828	0.274	0.266	0.000	0.194
2.873	0.274	0.271	0.000	0.195
2.918	0.274	0.275	0.000	0.196
2.963	0.274	0.280	0.000	0.197
3.008	0.274	0.285	0.000	0.198
3.052	0.274	0.289	0.000	0.199
3.097	0.274	0.294	0.000	0.200
3.142	0.274	0.299	0.000	0.201
3.187	0.274	0.303	0.000	0.201
3.232	0.274	0.308	0.000	0.202
3.277	0.274	0.313	0.000	0.203
3.322	0.274	0.317	0.000	0.204
3.367	0.275	0.322	0.000	0.205
3.412	0.275	0.327	0.000	0.206
3.456	0.275	0.331	0.000	0.207
3.501	0.275	0.336	0.000	0.208
3.546	0.275	0.348	1.293	0.209
3.591	0.275	0.361	30.45	0.210
3.636	0.275	0.373	78.38	0.210
3.681	0.275	0.385	139.4	0.211
3.726	0.275	0.398	211.0	0.212
3.771	0.275	0.410	291.9	0.213
3.816	0.275	0.422	381.2	0.214
3.860	0.275	0.435	478.0	0.215
3.905	0.275	0.447	581.9	0.216
3.950	0.275	0.459	692.4	0.217
3.995	0.275	0.472	809.1	0.218

Name : Lateral I Basin 2
Bypass: No

Impervious Land Use	Acres
Roof Area LAT	1.8

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 2,	

Name : Lateral Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	2.34

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1,	Gravel Trench Bed 1,	

Name : Trapezoidal Pond 1
Bottom Length: 102.466191347601ft.
Bottom Width: 102.466191347601ft.
Depth : 4ft.
Volume at riser head : 0.8650ft.
Infiltration On
Infiltration rate : 1
Infiltration saftey factor : 0.5
Wetted surface area On
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 18 in.
NotchType : Rectangular
Notch Width : 1.500 ft.
Notch Height: 0.630 ft.
Orifice 1 Diameter: 6.19 in. Elevation: 0 ft.

Element Flows To:
Outlet 1 Outlet 2

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.241	0.000	0.000	0.000
0.044	0.242	0.011	0.212	0.122
0.089	0.244	0.022	0.300	0.123
0.133	0.245	0.032	0.367	0.124
0.178	0.246	0.043	0.424	0.124
0.222	0.247	0.054	0.474	0.125
0.267	0.249	0.065	0.520	0.126
0.311	0.250	0.076	0.561	0.126
0.356	0.251	0.087	0.600	0.127
0.400	0.252	0.099	0.636	0.128
0.444	0.254	0.110	0.671	0.128
0.489	0.255	0.121	0.704	0.129
0.533	0.256	0.133	0.735	0.130
0.578	0.258	0.144	0.765	0.130
0.622	0.259	0.156	0.794	0.131
0.667	0.260	0.167	0.822	0.132
0.711	0.262	0.179	0.849	0.132
0.756	0.263	0.190	0.875	0.133
0.800	0.264	0.202	0.900	0.134
0.844	0.265	0.214	0.925	0.135
0.889	0.267	0.226	0.949	0.135
0.933	0.268	0.237	0.972	0.136
0.978	0.269	0.249	0.995	0.137
1.022	0.271	0.261	1.017	0.137
1.067	0.272	0.273	1.039	0.138

1.111	0.273	0.286	1.061	0.139
1.156	0.275	0.298	1.082	0.139
1.200	0.276	0.310	1.102	0.140
1.244	0.277	0.322	1.123	0.141
1.289	0.279	0.335	1.142	0.142
1.333	0.280	0.347	1.162	0.142
1.378	0.281	0.360	1.181	0.143
1.422	0.283	0.372	1.200	0.144
1.467	0.284	0.385	1.219	0.144
1.511	0.286	0.397	1.237	0.145
1.556	0.287	0.410	1.255	0.146
1.600	0.288	0.423	1.273	0.147
1.644	0.290	0.436	1.290	0.147
1.689	0.291	0.449	1.308	0.148
1.733	0.292	0.462	1.325	0.149
1.778	0.294	0.475	1.342	0.150
1.822	0.295	0.488	1.358	0.150
1.867	0.297	0.501	1.375	0.151
1.911	0.298	0.514	1.391	0.152
1.956	0.299	0.527	1.407	0.153
2.000	0.301	0.541	1.423	0.153
2.044	0.302	0.554	1.439	0.154
2.089	0.304	0.568	1.454	0.155
2.133	0.305	0.581	1.470	0.156
2.178	0.306	0.595	1.485	0.156
2.222	0.308	0.608	1.500	0.157
2.267	0.309	0.622	1.515	0.158
2.311	0.311	0.636	1.530	0.159
2.356	0.312	0.650	1.544	0.159
2.400	0.314	0.664	1.585	0.160
2.444	0.315	0.678	1.673	0.161
2.489	0.316	0.692	1.787	0.162
2.533	0.318	0.706	1.920	0.162
2.578	0.319	0.720	2.069	0.163
2.622	0.321	0.734	2.230	0.164
2.667	0.322	0.748	2.402	0.165
2.711	0.324	0.763	2.584	0.165
2.756	0.325	0.777	2.774	0.166
2.800	0.327	0.792	2.971	0.167
2.844	0.328	0.806	3.174	0.168
2.889	0.329	0.821	3.383	0.169
2.933	0.331	0.835	3.597	0.169
2.978	0.332	0.850	3.815	0.170
3.022	0.334	0.865	3.980	0.171
3.067	0.335	0.880	4.196	0.172
3.111	0.337	0.895	4.498	0.172
3.156	0.338	0.910	4.866	0.173
3.200	0.340	0.925	5.289	0.174
3.244	0.341	0.940	5.761	0.175
3.289	0.343	0.955	6.276	0.176
3.333	0.344	0.970	6.831	0.176
3.378	0.346	0.986	7.424	0.177
3.422	0.347	1.001	8.052	0.178
3.467	0.349	1.017	8.713	0.179
3.511	0.350	1.032	9.406	0.180
3.556	0.352	1.048	10.13	0.180
3.600	0.353	1.063	10.88	0.181

3.644	0.355	1.079	11.66	0.182
3.689	0.356	1.095	12.47	0.183
3.733	0.358	1.111	13.30	0.184
3.778	0.359	1.127	14.16	0.184
3.822	0.361	1.143	15.04	0.185
3.867	0.363	1.159	15.95	0.186
3.911	0.364	1.175	16.88	0.187
3.956	0.366	1.191	17.83	0.188
4.000	0.367	1.208	18.80	0.189
4.044	0.369	1.224	19.80	0.189

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	2.20639
5 year	7.746109
10 year	13.178761
25 year	15.909235

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	1.25464
5 year	5.696368
10 year	8.559117
25 year	13.001678

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	3.329	1.505
1962	0.044	0.964
1963	3.430	1.255
1964	3.079	1.669
1965	0.024	0.886
1966	1.563	1.089
1967	6.005	5.854
1968	12.279	12.759
1969	1.037	1.012
1970	9.726	10.077
1971	2.355	1.443
1972	1.913	1.076
1973	2.115	1.229
1974	2.733	1.203
1975	2.351	1.407
1976	1.377	1.201
1977	2.206	1.475
1978	0.190	0.949
1979	16.260	7.920
1980	7.117	5.129
1981	14.861	15.546
1982	1.393	0.918

1983	8.737	3.932
1984	5.847	2.805
1985	0.057	0.743
1986	5.244	1.435
1987	7.879	8.185
1988	0.550	0.836
1989	0.005	1.277
1990	0.025	0.903
1991	0.000	0.171
1992	7.267	4.322
1993	5.004	2.877
1994	14.646	7.367
1995	3.085	1.304
1996	15.876	9.261
1997	0.911	0.879
1998	0.568	1.060
1999	12.397	6.178
2000	0.015	0.542
2001	0:005	0.788
2002	0.003	0.747
2003	0.001	0.664
2004	1.802	0.969
2005	0.397	0.929

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	16.2603	15.5456
2	15.8758	12.7594
3	14.8605	10.0770
4	14.6455	9.2608
5	12.3965	8.1849
6	12.2794	7.9197
7	9.7258	7.3670
8	8.7365	6.1775
9	7.8792	5.8541
10	7.2672	5.1286
11	7.1173	4.3224
12	6.0051	3.9322
13	5.8465	2.8768
14	5.2438	2.8055
15	5.0041	1.6692
16	3.4299	1.5053
17	3.3285	1.4752
18	3.0853	1.4431
19	3.0792	1.4350
20	2.7325	1.4074
21	2.3547	1.3038
22	2.3511	1.2767
23	2.2064	1.2546
24	2.1150	1.2294
25	1.9134	1.2028
26	1.8025	1.2015
27	1.5634	1.0893
28	1.3929	1.0764
29	1.3771	1.0602
30	1.0368	1.0120

31	0.9112	0.9694
32	0.5681	0.9638
33	0.5498	0.9492
34	0.3969	0.9286
35	0.1904	0.9179
36	0.0571	0.9027
37	0.0440	0.8857
38	0.0247	0.8785
39	0.0240	0.8356
40	0.0149	0.7885
41	0.0055	0.7466
42	0.0049	0.7434
43	0.0034	0.6642
44	0.0006	0.5416
45	0.0000	0.1709

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
1.5492	482	277	57	Pass
1.6667	445	251	56	Pass
1.7842	408	236	57	Pass
1.9016	367	215	58	Pass
2.0191	341	202	59	Pass
2.1366	316	186	58	Pass
2.2540	292	175	59	Pass
2.3715	280	165	58	Pass
2.4890	265	157	59	Pass
2.6065	251	146	58	Pass
2.7239	239	140	58	Pass
2.8414	226	131	57	Pass
2.9589	211	125	59	Pass
3.0763	194	116	59	Pass
3.1938	179	111	62	Pass
3.3113	167	106	63	Pass
3.4287	156	103	66	Pass
3.5462	145	97	66	Pass
3.6637	141	89	63	Pass
3.7812	132	83	62	Pass
3.8986	122	79	64	Pass
4.0161	119	72	60	Pass
4.1336	114	68	59	Pass
4.2510	106	65	61	Pass
4.3685	96	62	64	Pass
4.4860	93	61	65	Pass
4.6034	87	58	66	Pass
4.7209	82	57	69	Pass
4.8384	76	53	69	Pass
4.9559	75	52	69	Pass
5.0733	69	49	71	Pass
5.1908	65	47	72	Pass
5.3083	61	46	75	Pass
5.4257	59	45	76	Pass

5.5432	56	43	76	Pass
5.6607	54	42	77	Pass
5.7781	52	39	75	Pass
5.8956	50	35	70	Pass
6.0131	44	34	77	Pass
6.1306	43	33	76	Pass
6.2480	41	31	75	Pass
6.3655	40	31	77	Pass
6.4830	39	31	79	Pass
6.6004	38	31	81	Pass
6.7179	37	31	83	Pass
6.8354	37	30	81	Pass
6.9528	35	27	77	Pass
7.0703	33	26	78	Pass
7.1878	31	26	83	Pass
7.3053	27	23	85	Pass
7.4227	26	19	73	Pass
7.5402	26	18	69	Pass
7.6577	24	17	70	Pass
7.7751	24	17	70	Pass
7.8926	22	17	77	Pass
8.0101	19	16	84	Pass
8.1275	18	16	88	Pass
8.2450	18	14	77	Pass
8.3625	18	14	77	Pass
8.4800	18	13	72	Pass
8.5974	17	11	64	Pass
8.7149	17	11	64	Pass
8.8324	15	11	73	Pass
8.9498	12	11	91	Pass
9.0673	11	11	100	Pass
9.1848	11	10	90	Pass
9.3022	11	9	81	Pass
9.4197	11	8	72	Pass
9.5372	11	8	72	Pass
9.6547	11	8	72	Pass
9.7721	10	8	80	Pass
9.8896	10	7	70	Pass
10.0071	10	7	70	Pass
10.1245	9	6	66	Pass
10.2420	8	6	75	Pass
10.3595	8	6	75	Pass
10.4769	8	5	62	Pass
10.5944	8	5	62	Pass
10.7119	8	5	62	Pass
10.8294	8	5	62	Pass
10.9468	8	5	62	Pass
11.0643	8	5	62	Pass
11.1818	7	5	71	Pass
11.2992	7	4	57	Pass
11.4167	7	4	57	Pass
11.5342	7	4	57	Pass
11.6516	7	3	42	Pass
11.7691	7	3	42	Pass
11.8866	6	3	50	Pass
12.0041	6	3	50	Pass
12.1215	6	2	33	Pass

12.2390	6	2	33	Pass
12.3565	5	2	40	Pass
12.4739	4	2	50	Pass
12.5914	4	2	50	Pass
12.7089	4	2	50	Pass
12.8264	4	1	25	Pass
12.9438	4	1	25	Pass
13.0613	4	1	25	Pass
13.1788	4	1	25	Pass

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0

Yearly Peaks for Predeveloped and Mitigated. POC #2

Year	Predeveloped	Mitigated

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated

POC #2
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass

0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass

```
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
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0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
```

```
Flow Frequency Return Periods for Predeveloped.  POC #3
Return Period          Flow(cfs)
2 year                   0
5 year                   0
10 year                  0
25 year                  0

Flow Frequency Return Periods for Mitigated.  POC #3
Return Period          Flow(cfs)
2 year                   0
5 year                   0
10 year                  0
25 year                  0
```

```
Yearly Peaks for Predeveloped and Mitigated.  POC #3
Year          Predeveloped    Mitigated
```

```
Ranked Yearly Peaks for Predeveloped and Mitigated.  POC #3
Rank      Predeveloped         Mitigated
```

```
POC #3
The Facility PASSED

The Facility PASSED.

Flow(CFS) Predev  Dev Percentage Pass/Fail
0.0000    0      0      0      Pass
0.0000    0      0      0      Pass
```

0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass

Drainage Basin 800B/8000B

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_8B
Site Address:
City :
Report Date : 4/1/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 0.80
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	2.25
B,Forest,Mod(5-10%)	1.2
B,Forest,Stee(10-20)	.91
B,Forest,Very(>20%)	.08
B,Grass,Flat(0-5%)	5.87
B,Grass,Mod(5-10%)	.12
B,Grass,Stee(10-20%)	.31
B,Grass,Very S(>20%)	.01
C D,Forest,Flat(0-5)	.22
C D,Forest,Mod(5-10)	.46
C D,Forest,St(10-20)	.65
C D,Forest,Very(>20)	5.65
C D,Shrub,Flat(0-5%)	.03
C D,Shrub,St(10-20%)	.02
C D,Shrub,Very(>20%)	2.51
C D,Grass,Flat(0-5%)	.7
C D,Grass,Mod(5-10%)	1.2
C D,Grass,Ste(10-20)	.36
C D,Grass,Very(>20%)	.12

Impervious Land Use	Acres		
Roads,Flat(0-5%)	0.07	,Mod(5-10%)	0.01

Element Flows To:
Surface Interflow Groundwater

Name : Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	Acres
B,Forest,Flat(0-5%)	.06
B,Forest,Mod(5-10%)	.08
C D,Forest,Flat(0-5)	.2
C D,Forest,Mod(5-10)	.43
C D,Forest,St(10-20)	.64
C D,Forest,Very(>20)	6.89
C D,Shrub,Flat(0-5%)	.04
C D,Shrub,St(10-20%)	.03
C D,Shrub,Very(>20%)	4
C D,Grass,Flat(0-5%)	1.56
C D,Grass,Mod(5-10%)	.2
C D,Grass,Very(>20%)	.16

Impervious Land Use	Acres
Roads,Flat(0-5%)	4.2

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Lateral I Basin 1

Bypass: No

Impervious Land Use		Acres
Sidewalks,Flat(0-5%)	LAT	0.09

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 1,	

Name : Lateral Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.13

Element Flows To:

Surface	Interflow	Groundwater
Trapezoidal Pond 1,	Trapezoidal Pond 1,	

Name : Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.04

Impervious Land Use	Acres
Driveways,Flat(0-5%)	0.07

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1,	Gravel Trench Bed 1,	

Name : Gravel Trench Bed 1
Bottom Length: 14ft.
Bottom Width : 255ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 0 To 1
Trench right side slope 2: 0 To 1
Material thickness of first layer : 0.46
Pour Space of material for first layer : 0.15
Material thickness of second layer : 0.08
Pour Space of material for second layer : 0.38
Material thickness of third layer : 3
Pour Space of material for third layer : 0.38
Infiltration On
Infiltration rate : 1
Infiltration saftey factor : 0.5
Wetted surface area On
Discharge Structure
Riser Height: 3.54 ft.
Riser Diameter: 974 in.

Element Flows To:

Outlet 1	Outlet 2
Trapezoidal Pond 1,	

Gravel Trench Bed Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.082	0.000	0.000	0.000
0.045	0.082	0.001	0.000	0.042
0.090	0.082	0.001	0.000	0.042
0.135	0.082	0.002	0.000	0.042
0.180	0.082	0.002	0.000	0.042
0.224	0.082	0.003	0.000	0.043
0.269	0.082	0.003	0.000	0.043
0.314	0.082	0.004	0.000	0.043

0.359	0.082	0.004	0.000	0.044
0.404	0.082	0.005	0.000	0.044
0.449	0.082	0.006	0.000	0.044
0.494	0.082	0.007	0.000	0.044
0.539	0.082	0.008	0.000	0.045
0.584	0.082	0.010	0.000	0.045
0.628	0.082	0.011	0.000	0.045
0.673	0.082	0.013	0.000	0.046
0.718	0.082	0.014	0.000	0.046
0.763	0.082	0.015	0.000	0.046
0.808	0.082	0.017	0.000	0.046
0.853	0.082	0.018	0.000	0.047
0.898	0.082	0.020	0.000	0.047
0.943	0.082	0.021	0.000	0.047
0.988	0.082	0.022	0.000	0.047
1.032	0.082	0.024	0.000	0.048
1.077	0.082	0.025	0.000	0.048
1.122	0.082	0.027	0.000	0.048
1.167	0.082	0.028	0.000	0.049
1.212	0.082	0.029	0.000	0.049
1.257	0.082	0.031	0.000	0.049
1.302	0.082	0.032	0.000	0.049
1.347	0.082	0.034	0.000	0.050
1.392	0.082	0.035	0.000	0.050
1.436	0.082	0.036	0.000	0.050
1.481	0.082	0.038	0.000	0.051
1.526	0.082	0.039	0.000	0.051
1.571	0.082	0.041	0.000	0.051
1.616	0.082	0.042	0.000	0.051
1.661	0.082	0.043	0.000	0.052
1.706	0.082	0.045	0.000	0.052
1.751	0.082	0.046	0.000	0.052
1.796	0.082	0.048	0.000	0.053
1.840	0.082	0.049	0.000	0.053
1.885	0.082	0.050	0.000	0.053
1.930	0.082	0.052	0.000	0.053
1.975	0.082	0.053	0.000	0.054
2.020	0.082	0.055	0.000	0.054
2.065	0.082	0.056	0.000	0.054
2.110	0.082	0.057	0.000	0.054
2.155	0.082	0.059	0.000	0.055
2.200	0.082	0.060	0.000	0.055
2.244	0.082	0.062	0.000	0.055
2.289	0.082	0.063	0.000	0.056
2.334	0.082	0.064	0.000	0.056
2.379	0.082	0.066	0.000	0.056
2.424	0.082	0.067	0.000	0.056
2.469	0.082	0.069	0.000	0.057
2.514	0.082	0.070	0.000	0.057
2.559	0.082	0.071	0.000	0.057
2.604	0.082	0.073	0.000	0.058
2.648	0.082	0.074	0.000	0.058
2.693	0.082	0.076	0.000	0.058
2.738	0.082	0.077	0.000	0.058
2.783	0.082	0.078	0.000	0.059
2.828	0.082	0.080	0.000	0.059
2.873	0.082	0.081	0.000	0.059

2.918	0.082	0.083	0.000	0.059
2.963	0.082	0.084	0.000	0.060
3.008	0.082	0.085	0.000	0.060
3.052	0.082	0.087	0.000	0.060
3.097	0.082	0.088	0.000	0.061
3.142	0.082	0.090	0.000	0.061
3.187	0.082	0.091	0.000	0.061
3.232	0.082	0.092	0.000	0.061
3.277	0.082	0.094	0.000	0.062
3.322	0.082	0.095	0.000	0.062
3.367	0.082	0.097	0.000	0.062
3.412	0.082	0.098	0.000	0.063
3.456	0.082	0.099	0.000	0.063
3.501	0.082	0.101	0.000	0.063
3.546	0.082	0.105	0.388	0.063
3.591	0.082	0.108	9.134	0.064
3.636	0.082	0.112	23.51	0.064
3.681	0.082	0.116	41.80	0.064
3.726	0.082	0.119	63.30	0.065
3.771	0.082	0.123	87.57	0.065
3.816	0.082	0.127	114.3	0.065
3.860	0.082	0.130	143.4	0.065
3.905	0.082	0.134	174.6	0.066
3.950	0.082	0.138	207.7	0.066
3.995	0.082	0.142	242.7	0.066

Name : Lateral I Basin 2
Bypass: No

Impervious Land Use	Acres
Roof Area LAT	0.37

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 2,	

Name : Lateral Basin 2
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.49

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1,	Gravel Trench Bed 1,	

Name : Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.24

Impervious Land Use	Acres
Driveways,Flat(0-5%)	0.49

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 2,	Gravel Trench Bed 2,	

Name : Gravel Trench Bed 2
Bottom Length: 14ft.
Bottom Width : 1683ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 0 To 1
Trench right side slope 2: 0 To 1
Material thickness of first layer : 0.46
Pour Space of material for first layer : 0.15
Material thickness of second layer : 0.08
Pour Space of material for second layer : 0.38
Material thickness of third layer : 6
Pour Space of material for third layer : 0.38
Infiltration On
Infiltration rate : 1
Infiltration saftey factor : 0.5
Wetted surface area On
Discharge Structure
Riser Height: 6.54 ft.
Riser Diameter: 6429 in.

Element Flows To:

Outlet 1	Outlet 2
Trapezoidal Pond 1,	

Gravel Trench Bed Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.541	0.000	0.000	0.000
0.078	0.541	0.006	0.000	0.276
0.156	0.541	0.013	0.000	0.279
0.235	0.541	0.019	0.000	0.282
0.313	0.541	0.025	0.000	0.285
0.391	0.541	0.032	0.000	0.288
0.469	0.541	0.048	0.000	0.291
0.548	0.541	0.064	0.000	0.294
0.626	0.541	0.080	0.000	0.297
0.704	0.541	0.096	0.000	0.300
0.782	0.542	0.112	0.000	0.303

0.860	0.542	0.128	0.000	0.307
0.939	0.542	0.144	0.000	0.310
1.017	0.542	0.160	0.000	0.313
1.095	0.542	0.177	0.000	0.316
1.173	0.542	0.193	0.000	0.319
1.252	0.542	0.209	0.000	0.322
1.330	0.542	0.225	0.000	0.325
1.408	0.542	0.241	0.000	0.328
1.486	0.542	0.257	0.000	0.331
1.564	0.542	0.273	0.000	0.334
1.643	0.542	0.289	0.000	0.337
1.721	0.542	0.305	0.000	0.340
1.799	0.542	0.322	0.000	0.343
1.877	0.542	0.338	0.000	0.346
1.956	0.542	0.354	0.000	0.350
2.034	0.542	0.370	0.000	0.353
2.112	0.543	0.386	0.000	0.356
2.190	0.543	0.402	0.000	0.359
2.268	0.543	0.418	0.000	0.362
2.347	0.543	0.434	0.000	0.365
2.425	0.543	0.451	0.000	0.368
2.503	0.543	0.467	0.000	0.371
2.581	0.543	0.483	0.000	0.374
2.660	0.543	0.499	0.000	0.377
2.738	0.543	0.515	0.000	0.380
2.816	0.543	0.531	0.000	0.383
2.894	0.543	0.547	0.000	0.386
2.972	0.543	0.564	0.000	0.389
3.051	0.543	0.580	0.000	0.393
3.129	0.543	0.596	0.000	0.396
3.207	0.543	0.612	0.000	0.399
3.285	0.543	0.628	0.000	0.402
3.364	0.544	0.644	0.000	0.405
3.442	0.544	0.661	0.000	0.408
3.520	0.544	0.677	0.000	0.411
3.598	0.544	0.693	0.000	0.414
3.676	0.544	0.709	0.000	0.417
3.755	0.544	0.725	0.000	0.420
3.833	0.544	0.741	0.000	0.423
3.911	0.544	0.757	0.000	0.426
3.989	0.544	0.774	0.000	0.429
4.068	0.544	0.790	0.000	0.432
4.146	0.544	0.806	0.000	0.436
4.224	0.544	0.822	0.000	0.439
4.302	0.544	0.838	0.000	0.442
4.380	0.544	0.855	0.000	0.445
4.459	0.544	0.871	0.000	0.448
4.537	0.544	0.887	0.000	0.451
4.615	0.544	0.903	0.000	0.454
4.693	0.545	0.919	0.000	0.457
4.772	0.545	0.935	0.000	0.460
4.850	0.545	0.952	0.000	0.463
4.928	0.545	0.968	0.000	0.466
5.006	0.545	0.984	0.000	0.469
5.084	0.545	1.000	0.000	0.472
5.163	0.545	1.016	0.000	0.476
5.241	0.545	1.033	0.000	0.479

5.319	0.545	1.049	0.000	0.482
5.397	0.545	1.065	0.000	0.485
5.476	0.545	1.081	0.000	0.488
5.554	0.545	1.097	0.000	0.491
5.632	0.545	1.114	0.000	0.494
5.710	0.545	1.130	0.000	0.497
5.788	0.545	1.146	0.000	0.500
5.867	0.545	1.162	0.000	0.503
5.945	0.546	1.178	0.000	0.506
6.023	0.546	1.195	0.000	0.509
6.101	0.546	1.211	0.000	0.512
6.180	0.546	1.227	0.000	0.515
6.258	0.546	1.243	0.000	0.519
6.336	0.546	1.260	0.000	0.522
6.414	0.546	1.276	0.000	0.525
6.492	0.546	1.292	0.000	0.528
6.571	0.546	1.335	28.02	0.531
6.649	0.546	1.377	187.5	0.534
6.727	0.546	1.420	422.3	0.537
6.805	0.546	1.463	713.1	0.540
6.884	0.546	1.506	1050.	0.543
6.962	0.546	1.548	1429.	0.546
7.040	0.546	1.591	1844.	0.549

Name : Lateral I Basin 3
Bypass: No

Impervious Land Use	Acres
Roof Area LAT	2.46

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 3,	

Name : Lateral Basin 3
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	3.21

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 2,	Gravel Trench Bed 2,	

Name : Trapezoidal Pond 1
Bottom Length: 144.73991871776ft.
Bottom Width: 144.73991871776ft.
Depth : 4ft.
Volume at riser head : 1.6432ft.

Infiltration On
Infiltration rate : 1
Infiltration saftey factor : 0.5
Wetted surface area On
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 18 in.
NotchType : Rectangular
Notch Width : 1.500 ft.
Notch Height: 0.602 ft.
Orifice 1 Diameter: 5.077 in. Elevation: 0 ft.

Element Flows To:
Outlet 1 Outlet 2

Pond Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.481	0.000	0.000	0.000
0.044	0.483	0.021	0.143	0.243
0.089	0.484	0.043	0.202	0.244
0.133	0.486	0.064	0.247	0.245
0.178	0.488	0.086	0.285	0.246
0.222	0.490	0.108	0.319	0.247
0.267	0.492	0.130	0.350	0.248
0.311	0.493	0.152	0.378	0.249
0.356	0.495	0.174	0.404	0.250
0.400	0.497	0.196	0.428	0.251
0.444	0.499	0.218	0.451	0.252
0.489	0.501	0.240	0.473	0.253
0.533	0.502	0.262	0.494	0.254
0.578	0.504	0.285	0.515	0.255
0.622	0.506	0.307	0.534	0.256
0.667	0.508	0.330	0.553	0.257
0.711	0.510	0.352	0.571	0.258
0.756	0.512	0.375	0.588	0.259
0.800	0.513	0.398	0.606	0.260
0.844	0.515	0.421	0.622	0.261
0.889	0.517	0.443	0.638	0.262
0.933	0.519	0.466	0.654	0.263
0.978	0.521	0.490	0.669	0.264
1.022	0.523	0.513	0.684	0.265
1.067	0.524	0.536	0.699	0.266
1.111	0.526	0.559	0.714	0.267
1.156	0.528	0.583	0.728	0.268
1.200	0.530	0.606	0.742	0.269
1.244	0.532	0.630	0.755	0.270
1.289	0.534	0.654	0.769	0.271
1.333	0.536	0.677	0.782	0.272
1.378	0.537	0.701	0.795	0.273
1.422	0.539	0.725	0.807	0.273

1.467	0.541	0.749	0.820	0.274
1.511	0.543	0.773	0.832	0.275
1.556	0.545	0.797	0.844	0.276
1.600	0.547	0.822	0.856	0.278
1.644	0.549	0.846	0.868	0.279
1.689	0.551	0.870	0.880	0.280
1.733	0.553	0.895	0.891	0.281
1.778	0.554	0.920	0.903	0.282
1.822	0.556	0.944	0.914	0.283
1.867	0.558	0.969	0.925	0.284
1.911	0.560	0.994	0.936	0.285
1.956	0.562	1.019	0.947	0.286
2.000	0.564	1.044	0.957	0.287
2.044	0.566	1.069	0.968	0.288
2.089	0.568	1.094	0.978	0.289
2.133	0.570	1.119	0.989	0.290
2.178	0.572	1.145	0.999	0.291
2.222	0.574	1.170	1.009	0.292
2.267	0.576	1.196	1.019	0.293
2.311	0.578	1.221	1.029	0.294
2.356	0.579	1.247	1.039	0.295
2.400	0.581	1.273	1.049	0.296
2.444	0.583	1.299	1.108	0.297
2.489	0.585	1.325	1.203	0.298
2.533	0.587	1.351	1.320	0.299
2.578	0.589	1.377	1.454	0.300
2.622	0.591	1.403	1.603	0.301
2.667	0.593	1.429	1.764	0.302
2.711	0.595	1.456	1.935	0.303
2.756	0.597	1.482	2.116	0.304
2.800	0.599	1.509	2.304	0.305
2.844	0.601	1.536	2.499	0.306
2.889	0.603	1.562	2.700	0.307
2.933	0.605	1.589	2.907	0.308
2.978	0.607	1.616	3.118	0.309
3.022	0.609	1.643	3.278	0.311
3.067	0.611	1.670	3.489	0.312
3.111	0.613	1.698	3.788	0.313
3.156	0.615	1.725	4.151	0.314
3.200	0.617	1.752	4.570	0.315
3.244	0.619	1.780	5.037	0.316
3.289	0.621	1.807	5.548	0.317
3.333	0.623	1.835	6.100	0.318
3.378	0.625	1.863	6.689	0.319
3.422	0.627	1.890	7.313	0.320
3.467	0.629	1.918	7.970	0.321
3.511	0.631	1.946	8.659	0.322
3.556	0.633	1.974	9.378	0.323
3.600	0.635	2.003	10.13	0.324
3.644	0.637	2.031	10.90	0.326
3.689	0.639	2.059	11.71	0.327
3.733	0.641	2.088	12.53	0.328
3.778	0.643	2.116	13.39	0.329
3.822	0.645	2.145	14.27	0.330
3.867	0.647	2.174	15.17	0.331
3.911	0.650	2.202	16.10	0.332
3.956	0.652	2.231	17.04	0.333

4.000	0.654	2.260	18.01	0.334
4.044	0.656	2.289	19.01	0.335

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	1.14363
5 year	5.241891
10 year	9.398902
25 year	11.333548

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.595935
5 year	1.630067
10 year	4.780973
25 year	9.657778

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	1.709	0.731
1962	0.054	0.468
1963	1.644	0.592
1964	1.726	0.874
1965	0.045	0.431
1966	0.559	0.468
1967	3.692	2.847
1968	8.972	10.255
1969	0.406	0.497
1970	6.842	6.556
1971	0.990	0.657
1972	0.947	0.494
1973	1.144	0.622
1974	1.559	0.596
1975	1.271	0.757
1976	0.711	0.546
1977	1.274	0.787
1978	0.100	0.512
1979	11.879	2.921
1980	5.032	1.153
1981	10.794	9.601
1982	0.542	0.433
1983	5.764	1.181
1984	2.783	0.828
1985	0.054	0.351
1986	2.788	0.709
1987	5.300	3.834
1988	0.177	0.435
1989	0.095	0.568
1990	0.029	0.449

1991	0.006	0.075
1992	4.894	1.014
1993	3.135	0.899
1994	10.199	2.058
1995	1.392	0.599
1996	11.282	8.045
1997	0.339	0.431
1998	0.220	0.568
1999	8.727	1.755
2000	0.025	0.266
2001	0.026	0.387
2002	0.021	0.381
2003	0.030	0.315
2004	0.745	0.451
2005	0.121	0.437

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	11.8790	10.2551
2	11.2816	9.6009
3	10.7935	8.0446
4	10.1988	6.5565
5	8.9723	3.8340
6	8.7275	2.9213
7	6.8422	2.8467
8	5.7636	2.0584
9	5.3003	1.7548
10	5.0317	1.1810
11	4.8935	1.1528
12	3.6923	1.0141
13	3.1349	0.8986
14	2.7881	0.8743
15	2.7827	0.8283
16	1.7256	0.7872
17	1.7090	0.7568
18	1.6439	0.7310
19	1.5593	0.7089
20	1.3918	0.6575
21	1.2740	0.6215
22	1.2706	0.5990
23	1.1436	0.5959
24	0.9905	0.5918
25	0.9471	0.5681
26	0.7450	0.5675
27	0.7114	0.5465
28	0.5588	0.5117
29	0.5418	0.4968
30	0.4057	0.4944
31	0.3388	0.4682
32	0.2199	0.4679
33	0.1769	0.4510
34	0.1210	0.4485
35	0.1000	0.4365
36	0.0946	0.4354
37	0.0544	0.4327
38	0.0537	0.4308

39	0.0447	0.4308
40	0.0301	0.3872
41	0.0291	0.3810
42	0.0257	0.3511
43	0.0248	0.3151
44	0.0209	0.2661
45	0.0063	0.0746

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
1.0484	427	187	43	Pass
1.1327	377	166	44	Pass
1.2171	338	145	42	Pass
1.3014	313	136	43	Pass
1.3858	293	126	43	Pass
1.4701	277	120	43	Pass
1.5545	263	113	42	Pass
1.6388	250	105	42	Pass
1.7232	239	99	41	Pass
1.8075	222	96	43	Pass
1.8919	207	91	43	Pass
1.9762	194	88	45	Pass
2.0606	176	82	46	Pass
2.1449	165	80	48	Pass
2.2293	157	73	46	Pass
2.3136	151	70	46	Pass
2.3980	139	65	46	Pass
2.4823	127	62	48	Pass
2.5667	121	59	48	Pass
2.6510	116	57	49	Pass
2.7354	106	56	52	Pass
2.8197	96	56	58	Pass
2.9041	89	49	55	Pass
2.9884	87	46	52	Pass
3.0727	86	45	52	Pass
3.1571	76	45	59	Pass
3.2414	72	43	59	Pass
3.3258	67	41	61	Pass
3.4101	67	40	59	Pass
3.4945	62	39	62	Pass
3.5788	57	38	66	Pass
3.6632	56	37	66	Pass
3.7475	51	36	70	Pass
3.8319	48	35	72	Pass
3.9162	46	32	69	Pass
4.0006	45	31	68	Pass
4.0849	43	31	72	Pass
4.1693	41	29	70	Pass
4.2536	40	25	62	Pass
4.3380	39	24	61	Pass
4.4223	39	23	58	Pass
4.5067	38	22	57	Pass

4.5910	37	21	56	Pass
4.6754	36	20	55	Pass
4.7597	36	18	50	Pass
4.8441	35	17	48	Pass
4.9284	33	17	51	Pass
5.0128	33	16	48	Pass
5.0971	28	16	57	Pass
5.1815	28	16	57	Pass
5.2658	26	16	61	Pass
5.3502	24	15	62	Pass
5.4345	24	15	62	Pass
5.5189	22	15	68	Pass
5.6032	19	14	73	Pass
5.6876	18	14	77	Pass
5.7719	16	14	87	Pass
5.8563	16	13	81	Pass
5.9406	14	13	92	Pass
6.0250	13	13	100	Pass
6.1093	13	12	92	Pass
6.1937	12	12	100	Pass
6.2780	11	10	90	Pass
6.3623	11	10	90	Pass
6.4467	11	10	90	Pass
6.5310	11	10	90	Pass
6.6154	11	9	81	Pass
6.6997	10	8	80	Pass
6.7841	10	8	80	Pass
6.8684	9	8	88	Pass
6.9528	8	8	100	Pass
7.0371	8	8	100	Pass
7.1215	8	8	100	Pass
7.2058	8	8	100	Pass
7.2902	8	7	87	Pass
7.3745	8	7	87	Pass
7.4589	8	7	87	Pass
7.5432	8	7	87	Pass
7.6276	8	7	87	Pass
7.7119	8	7	87	Pass
7.7963	7	7	100	Pass
7.8806	7	7	100	Pass
7.9650	7	7	100	Pass
8.0493	7	6	85	Pass
8.1337	7	6	85	Pass
8.2180	7	5	71	Pass
8.3024	7	4	57	Pass
8.3867	7	4	57	Pass
8.4711	7	4	57	Pass
8.5554	7	4	57	Pass
8.6398	6	4	66	Pass
8.7241	6	4	66	Pass
8.8085	5	4	80	Pass
8.8928	5	4	80	Pass
8.9772	4	4	100	Pass
9.0615	4	4	100	Pass
9.1459	4	4	100	Pass
9.2302	4	4	100	Pass
9.3146	4	3	75	Pass

```
9.3989    4         3         75       Pass
```

```
Flow Frequency Return Periods for Predeveloped.  POC #2
Return Period           Flow(cfs)
2 year                    0
5 year                    0
10 year                   0
25 year                   0

Flow Frequency Return Periods for Mitigated.  POC #2
Return Period           Flow(cfs)
2 year                    0
5 year                    0
10 year                   0
25 year                   0
```

```
Yearly Peaks for Predeveloped and Mitigated.  POC #2
Year          Predeveloped    Mitigated
```

```
Ranked Yearly Peaks for Predeveloped and Mitigated.  POC #2
Rank     Predeveloped         Mitigated
```

```
POC #2
The Facility PASSED

The Facility PASSED.

Flow(CFS) Predev  Dev Percentage Pass/Fail
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
0.0000    0       0      0       Pass
```

0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass

Flow Frequency Return Periods for Predeveloped. POC #3

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0

Flow Frequency Return Periods for Mitigated. POC #3

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0

Yearly Peaks for Predeveloped and Mitigated. POC #3

Year	Predeveloped	Mitigated

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #3

Rank	Predeveloped	Mitigated

POC #3
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass

0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
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0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass
0.0000	0	0	0	Pass

```
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
0.0000   0    0    0    Pass
```

Drainage Basin 900A/9000A

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_9_1A
Site Address:
City :
Report Date : 6/15/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 1.64
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 900A
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Forest,Flat(0-5%)	.05
A,Forest,Mod(5-10%)	.05
A,Forest,Stee(10-20)	.02
A,Forest,Very(>20%)	.09
A,Shrub,Stee(10-20%)	.02
A,Shrub,Very S(>20%)	.05
B,Forest,Flat(0-5%)	4.67
B,Forest,Mod(5-10%)	1.2
B,Forest,Stee(10-20)	.2
B,Forest,Very(>20%)	1.1
C D,Forest,Flat(0-5)	.13
C D,Forest,Mod(5-10)	.49
C D,Forest,St(10-20)	.88
C D,Forest,Very(>20)	3.76
C D,Shrub,Flat(0-5%)	.01
C D,Shrub,St(10-20%)	.08
C D,Shrub,Very(>20%)	1.76

Impervious Land Use	Acres				
Roads,Flat(0-5%)	0.28	,Mod(5-10%)		4.15	
,Steep(10-20%)	0.4	,VeryStee(>20%)	0.09		

Element Flows To:
Surface Interflow Groundwater

Name : Basin 9000A
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Forest,Stee(10-20)	.02
B,Forest,Stee(10-20)	.18
C D,Forest,St(10-20)	.87
B,Forest,Very(>20%)	.03
C D,Forest,Very(>20)	4.1
A,Forest,Mod(5-10%)	.03
B,Forest,Mod(5-10%)	.61
C D,Forest,Mod(5-10)	.52
A,Forest,Flat(0-5%)	.05
B,Forest,Flat(0-5%)	1.9
C D,Forest,Flat(0-5)	.14
B,Shrub,Stee(10-20%)	.02
C D,Shrub,St(10-20%)	.08
A,Shrub,Very S(>20%)	.05
C D,Shrub,Very(>20%)	1.77
C D,Shrub,Flat(0-5%)	.01
C D,Grass,Very(>20%)	.36
C D,Grass,Flat(0-5%)	.5

Impervious Land Use	Acres				
Roads,Flat(0-5%)	1.76	,Mod(5-10%)		3.57	
,Steep(10-20%)	0.1	,VerySteep(>20%)	0.01		

Element Flows To:

Surface	Interflow	Groundwater
Vault 9_1A,	Vault 9_1A,	

Name : Lateral I Basin 1
Bypass: No

Impervious Land Use		Acres
Sidewalks,Flat(0-5%)	LAT	0.13

Element Flows To:

Outlet 1	Outlet 2
Lateral Basin 1,	

Name : Lateral Basin 1
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Grass,Flat(0-5%)	.13

Element Flows To:

Surface	Interflow	Groundwater
Vault 9_1A,	Vault 9_1A,	

Name : Vault 9_1A
Width : 78.0445217108099 ft.
Length : 78.0445217108099 ft.
Depth: 4ft.

Discharge Structure

Riser Height: 3 ft.
Riser Diameter: 18 in.
NotchType : Rectangular
Notch Width : 1.500 ft.
Notch Height: 0.673 ft.
Orifice 1 Diameter: 5.405 in. **Elevation:** 0 ft.

Element Flows To:

Outlet 1	Outlet 2

Vault Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.140	0.000	0.000	0.000
0.044	0.140	0.006	0.162	0.000
0.089	0.140	0.012	0.229	0.000
0.133	0.140	0.019	0.280	0.000
0.178	0.140	0.025	0.324	0.000
0.222	0.140	0.031	0.362	0.000
0.267	0.140	0.037	0.396	0.000
0.311	0.140	0.044	0.428	0.000
0.356	0.140	0.050	0.458	0.000
0.400	0.140	0.056	0.485	0.000
0.444	0.140	0.062	0.512	0.000
0.489	0.140	0.068	0.536	0.000
0.533	0.140	0.075	0.560	0.000
0.578	0.140	0.081	0.583	0.000
0.622	0.140	0.087	0.605	0.000
0.667	0.140	0.093	0.626	0.000
0.711	0.140	0.099	0.647	0.000
0.756	0.140	0.106	0.667	0.000
0.800	0.140	0.112	0.686	0.000
0.844	0.140	0.118	0.705	0.000
0.889	0.140	0.124	0.723	0.000
0.933	0.140	0.131	0.741	0.000
0.978	0.140	0.137	0.759	0.000
1.022	0.140	0.143	0.776	0.000
1.067	0.140	0.149	0.792	0.000
1.111	0.140	0.155	0.809	0.000
1.156	0.140	0.162	0.825	0.000
1.200	0.140	0.168	0.841	0.000
1.244	0.140	0.174	0.856	0.000
1.289	0.140	0.180	0.871	0.000
1.333	0.140	0.186	0.886	0.000

1.378	0.140	0.193	0.901	0.000
1.422	0.140	0.199	0.915	0.000
1.467	0.140	0.205	0.929	0.000
1.511	0.140	0.211	0.943	0.000
1.556	0.140	0.218	0.957	0.000
1.600	0.140	0.224	0.971	0.000
1.644	0.140	0.230	0.984	0.000
1.689	0.140	0.236	0.997	0.000
1.733	0.140	0.242	1.010	0.000
1.778	0.140	0.249	1.023	0.000
1.822	0.140	0.255	1.036	0.000
1.867	0.140	0.261	1.048	0.000
1.911	0.140	0.267	1.061	0.000
1.956	0.140	0.273	1.073	0.000
2.000	0.140	0.280	1.085	0.000
2.044	0.140	0.286	1.097	0.000
2.089	0.140	0.292	1.109	0.000
2.133	0.140	0.298	1.121	0.000
2.178	0.140	0.305	1.132	0.000
2.222	0.140	0.311	1.144	0.000
2.267	0.140	0.317	1.155	0.000
2.311	0.140	0.323	1.166	0.000
2.356	0.140	0.329	1.201	0.000
2.400	0.140	0.336	1.285	0.000
2.444	0.140	0.342	1.395	0.000
2.489	0.140	0.348	1.524	0.000
2.533	0.140	0.354	1.669	0.000
2.578	0.140	0.360	1.826	0.000
2.622	0.140	0.367	1.995	0.000
2.667	0.140	0.373	2.173	0.000
2.711	0.140	0.379	2.359	0.000
2.756	0.140	0.385	2.553	0.000
2.800	0.140	0.392	2.753	0.000
2.844	0.140	0.398	2.959	0.000
2.889	0.140	0.404	3.170	0.000
2.933	0.140	0.410	3.385	0.000
2.978	0.140	0.416	3.603	0.000
3.022	0.140	0.423	3.767	0.000
3.067	0.140	0.429	3.980	0.000
3.111	0.140	0.435	4.279	0.000
3.156	0.140	0.441	4.644	0.000
3.200	0.140	0.447	5.064	0.000
3.244	0.140	0.454	5.532	0.000
3.289	0.140	0.460	6.044	0.000
3.333	0.140	0.466	6.597	0.000
3.378	0.140	0.472	7.187	0.000
3.422	0.140	0.479	7.812	0.000
3.467	0.140	0.485	8.470	0.000
3.511	0.140	0.491	9.160	0.000
3.556	0.140	0.497	9.881	0.000
3.600	0.140	0.503	10.63	0.000
3.644	0.140	0.510	11.41	0.000
3.689	0.140	0.516	12.21	0.000
3.733	0.140	0.522	13.04	0.000
3.778	0.140	0.528	13.90	0.000
3.822	0.140	0.534	14.78	0.000
3.867	0.140	0.541	15.68	0.000

3.911	0.140	0.547	16.61	0.000
3.956	0.140	0.553	17.56	0.000
4.000	0.140	0.559	18.53	0.000
4.044	0.140	0.566	19.52	0.000
4.089	0.000	0.000	20.54	0.000

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	2.71139
5 year	5.85474
10 year	9.228261
25 year	11.359517

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	1.18652
5 year	5.13014
10 year	7.239263
25 year	8.589229

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	2.827	2.058
1962	2.457	1.021
1963	3.299	1.281
1964	4.766	1.713
1965	2.238	0.948
1966	1.415	0.923
1967	4.664	4.628
1968	8.455	8.300
1969	2.374	1.049
1970	6.729	7.056
1971	2.145	1.612
1972	1.692	0.981
1973	1.790	1.046
1974	2.446	1.035
1975	1.920	1.231
1976	2.459	1.157
1977	2.711	1.413
1978	2.406	1.065
1979	11.154	8.460
1980	5.129	5.270
1981	10.030	9.950
1982	2.406	0.946
1983	6.519	4.081
1984	4.701	2.925
1985	1.838	0.797
1986	4.326	1.630
1987	5.801	5.270

1988	1.485	0.911
1989	5.870	2.090
1990	1.722	0.977
1991	0.413	0.254
1992	5.361	4.480
1993	3.895	3.055
1994	11.706	7.583
1995	2.855	1.187
1996	11.327	5.813
1997	3.126	0.945
1998	1.883	1.157
1999	8.801	6.536
2000	1.267	0.607
2001	1.556	0.865
2002	1.175	0.825
2003	1.880	0.702
2004	2.903	1.032
2005	1.890	0.977

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	11.7062	9.9500
2	11.3265	8.4596
3	11.1536	8.2999
4	10.0296	7.5828
5	8.8009	7.0561
6	8.4546	6.5363
7	6.7290	5.8131
8	6.5189	5.2705
9	5.8696	5.2697
10	5.8014	4.6277
11	5.3606	4.4801
12	5.1291	4.0806
13	4.7660	3.0555
14	4.7009	2.9248
15	4.6641	2.0902
16	4.3260	2.0575
17	3.8953	1.7127
18	3.2989	1.6303
19	3.1263	1.6124
20	2.9029	1.4127
21	2.8548	1.2805
22	2.8274	1.2311
23	2.7114	1.1865
24	2.4590	1.1572
25	2.4571	1.1568
26	2.4460	1.0650
27	2.4062	1.0488
28	2.4056	1.0459
29	2.3742	1.0355
30	2.2379	1.0325
31	2.1450	1.0214
32	1.9205	0.9807
33	1.8899	0.9773
34	1.8828	0.9769
35	1.8796	0.9477

36	1.8381	0.9458
37	1.7900	0.9449
38	1.7219	0.9227
39	1.6921	0.9106
40	1.5559	0.8648
41	1.4846	0.8250
42	1.4153	0.7972
43	1.2669	0.7021
44	1.1750	0.6075
45	0.4134	0.2541

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
1.1709	747	341	45	Pass
1.2523	693	301	43	Pass
1.3337	618	278	44	Pass
1.4151	558	266	47	Pass
1.4965	501	248	49	Pass
1.5779	467	234	50	Pass
1.6593	435	217	49	Pass
1.7407	402	211	52	Pass
1.8220	371	201	54	Pass
1.9034	330	184	55	Pass
1.9848	308	176	57	Pass
2.0662	283	164	57	Pass
2.1476	268	155	57	Pass
2.2290	255	150	58	Pass
2.3104	237	143	60	Pass
2.3918	214	134	62	Pass
2.4731	194	122	62	Pass
2.5545	179	114	63	Pass
2.6359	168	111	66	Pass
2.7173	160	108	67	Pass
2.7987	149	98	65	Pass
2.8801	140	94	67	Pass
2.9615	134	88	65	Pass
3.0428	127	86	67	Pass
3.1242	121	83	68	Pass
3.2056	113	77	68	Pass
3.2870	108	74	68	Pass
3.3684	101	72	71	Pass
3.4498	95	68	71	Pass
3.5312	90	68	75	Pass
3.6126	82	66	80	Pass
3.6939	77	60	77	Pass
3.7753	73	58	79	Pass
3.8567	71	58	81	Pass
3.9381	68	58	85	Pass
4.0195	66	57	86	Pass
4.1009	63	52	82	Pass
4.1823	60	49	81	Pass
4.2637	59	46	77	Pass

4.3450	55	45	81	Pass
4.4264	49	44	89	Pass
4.5078	49	39	79	Pass
4.5892	49	38	77	Pass
4.6706	48	36	75	Pass
4.7520	46	34	73	Pass
4.8334	42	33	78	Pass
4.9148	42	33	78	Pass
4.9961	39	32	82	Pass
5.0775	37	31	83	Pass
5.1589	34	28	82	Pass
5.2403	33	26	78	Pass
5.3217	32	23	71	Pass
5.4031	29	23	79	Pass
5.4845	25	23	92	Pass
5.5658	23	23	100	Pass
5.6472	22	22	100	Pass
5.7286	22	19	86	Pass
5.8100	21	18	85	Pass
5.8914	19	16	84	Pass
5.9728	19	16	84	Pass
6.0542	18	15	83	Pass
6.1356	18	14	77	Pass
6.2169	18	13	72	Pass
6.2983	14	13	92	Pass
6.3797	14	12	85	Pass
6.4611	13	10	76	Pass
6.5425	12	9	75	Pass
6.6239	11	8	72	Pass
6.7053	11	8	72	Pass
6.7867	10	8	80	Pass
6.8680	10	8	80	Pass
6.9494	10	7	70	Pass
7.0308	10	7	70	Pass
7.1122	10	6	60	Pass
7.1936	9	6	66	Pass
7.2750	8	6	75	Pass
7.3564	8	6	75	Pass
7.4377	8	6	75	Pass
7.5191	8	6	75	Pass
7.6005	8	5	62	Pass
7.6819	8	4	50	Pass
7.7633	7	4	57	Pass
7.8447	7	4	57	Pass
7.9261	7	4	57	Pass
8.0075	7	4	57	Pass
8.0888	7	3	42	Pass
8.1702	7	3	42	Pass
8.2516	7	3	42	Pass
8.3330	6	2	33	Pass
8.4144	6	2	33	Pass
8.4958	5	1	20	Pass
8.5772	5	1	20	Pass
8.6586	5	1	20	Pass
8.7399	5	1	20	Pass
8.8213	4	1	25	Pass
8.9027	4	1	25	Pass

8.9841	4	1	25	Pass
9.0655	4	1	25	Pass
9.1469	4	1	25	Pass
9.2283	4	1	25	Pass

Drawdown Time Results
Pond: Vault 9_1A

Days	Stage(feet)	Percent of Total Run Time
1	0.000	100.00
2	0.000	100.00
3	0.000	100.00
4	0.000	100.00
5	0.000	100.00

Maximum Stage: 3.862
Drawdown Time: 00 05:51:20

Drainage Basin 900B/9000B

San Diego Hydrology Model
PROJECT REPORT

Project Name: Basin_9_1B
Site Address:
City :
Report Date : 6/15/2009
Gage : San Diego Airport
Data Start : 1959/10/02
Data End : 2004/10/30
Precip Scale: 1.64
SDHM Version:

PREDEVELOPED LAND USE

Name : Basin 900B
Bypass: No

GroundWater: No

Pervious Land Use	Acres
A,Forest,Flat(0-5%)	1.63
A,Forest,Stee(10-20)	.01
A,Forest,Very(>20%)	.01

Impervious Land Use	Acres				
Roads,Flat(0-5%)	0.16	,Mod(5-10%)	0.04	,Steep(10-20%)	0.02
,VeryStee(>20%)	0.05				

Element Flows To:
Surface Interflow Groundwater

Name : Basin 9000B
Bypass: No

GroundWater: No

Pervious Land Use	Acres
C D,Dirt, Very(>20%)	.02
C D,Dirt, Mod(5-10%)	.07
C D,Dirt, Flat(0-5%)	1.06

Impervious Land Use	Acres
Roof Area	0.21

Element Flows To:

Surface	Interflow	Groundwater
Vault 9_1B,	Vault 9_1B,	

Name : Vault 9_1B
Width : 68.867757263484 ft.
Length : 68.867757263484 ft.
Depth: 4ft.

Discharge Structure

Riser Height: 3 ft.
Riser Diameter: 18 in.
NotchType : Rectangular
Notch Width : 0.190 ft.
Notch Height: 0.600 ft.
Orifice 1 Diameter: 0.981 in. **Elevation:** 0 ft.

Element Flows To:

Outlet 1	Outlet 2

Vault Hydraulic Table

Stage(ft)	Area(acr)	Volume(acr-ft)	Dschrg(cfs)	Infilt(cfs)
0.000	0.109	0.000	0.000	0.000
0.044	0.109	0.005	0.005	0.000
0.089	0.109	0.010	0.008	0.000
0.133	0.109	0.015	0.009	0.000
0.178	0.109	0.019	0.011	0.000
0.222	0.109	0.024	0.012	0.000
0.267	0.109	0.029	0.013	0.000
0.311	0.109	0.034	0.014	0.000
0.356	0.109	0.039	0.015	0.000
0.400	0.109	0.044	0.016	0.000
0.444	0.109	0.048	0.017	0.000
0.489	0.109	0.053	0.018	0.000
0.533	0.109	0.058	0.018	0.000
0.578	0.109	0.063	0.019	0.000
0.622	0.109	0.068	0.020	0.000
0.667	0.109	0.073	0.021	0.000
0.711	0.109	0.077	0.021	0.000
0.756	0.109	0.082	0.022	0.000
0.800	0.109	0.087	0.023	0.000
0.844	0.109	0.092	0.023	0.000
0.889	0.109	0.097	0.024	0.000
0.933	0.109	0.102	0.024	0.000
0.978	0.109	0.106	0.025	0.000
1.022	0.109	0.111	0.026	0.000
1.067	0.109	0.116	0.026	0.000
1.111	0.109	0.121	0.027	0.000
1.156	0.109	0.126	0.027	0.000
1.200	0.109	0.131	0.028	0.000
1.244	0.109	0.135	0.028	0.000
1.289	0.109	0.140	0.029	0.000
1.333	0.109	0.145	0.029	0.000

1.378	0.109	0.150	0.030	0.000
1.422	0.109	0.155	0.030	0.000
1.467	0.109	0.160	0.031	0.000
1.511	0.109	0.165	0.031	0.000
1.556	0.109	0.169	0.032	0.000
1.600	0.109	0.174	0.032	0.000
1.644	0.109	0.179	0.032	0.000
1.689	0.109	0.184	0.033	0.000
1.733	0.109	0.189	0.033	0.000
1.778	0.109	0.194	0.034	0.000
1.822	0.109	0.198	0.034	0.000
1.867	0.109	0.203	0.035	0.000
1.911	0.109	0.208	0.035	0.000
1.956	0.109	0.213	0.035	0.000
2.000	0.109	0.218	0.036	0.000
2.044	0.109	0.223	0.036	0.000
2.089	0.109	0.227	0.037	0.000
2.133	0.109	0.232	0.037	0.000
2.178	0.109	0.237	0.037	0.000
2.222	0.109	0.242	0.038	0.000
2.267	0.109	0.247	0.038	0.000
2.311	0.109	0.252	0.038	0.000
2.356	0.109	0.256	0.039	0.000
2.400	0.109	0.261	0.039	0.000
2.444	0.109	0.266	0.045	0.000
2.489	0.109	0.271	0.056	0.000
2.533	0.109	0.276	0.070	0.000
2.578	0.109	0.281	0.086	0.000
2.622	0.109	0.286	0.104	0.000
2.667	0.109	0.290	0.124	0.000
2.711	0.109	0.295	0.145	0.000
2.756	0.109	0.300	0.167	0.000
2.800	0.109	0.305	0.190	0.000
2.844	0.109	0.310	0.213	0.000
2.889	0.109	0.315	0.238	0.000
2.933	0.109	0.319	0.263	0.000
2.978	0.109	0.324	0.289	0.000
3.022	0.109	0.329	0.351	0.000
3.067	0.109	0.334	0.554	0.000
3.111	0.109	0.339	0.844	0.000
3.156	0.109	0.344	1.200	0.000
3.200	0.109	0.348	1.611	0.000
3.244	0.109	0.353	2.070	0.000
3.289	0.109	0.358	2.573	0.000
3.333	0.109	0.363	3.116	0.000
3.378	0.109	0.368	3.697	0.000
3.422	0.109	0.373	4.313	0.000
3.467	0.109	0.377	4.963	0.000
3.511	0.109	0.382	5.644	0.000
3.556	0.109	0.387	6.356	0.000
3.600	0.109	0.392	7.096	0.000
3.644	0.109	0.397	7.865	0.000
3.689	0.109	0.402	8.660	0.000
3.733	0.109	0.406	9.482	0.000
3.778	0.109	0.411	10.33	0.000
3.822	0.109	0.416	11.20	0.000
3.867	0.109	0.421	12.09	0.000

3.911	0.109	0.426	13.01	0.000
3.956	0.109	0.431	13.95	0.000
4.000	0.109	0.436	14.92	0.000
4.044	0.109	0.440	15.90	0.000
4.089	0.000	0.000	16.91	0.000

MITIGATED LAND USE

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.127432
5 year	0.195893
10 year	0.32442
25 year	0.431556

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.013471
5 year	0.024923
10 year	0.038622
25 year	0.266149

Yearly Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1961	0.101	0.012
1962	0.134	0.009
1963	0.135	0.014
1964	0.258	0.020
1965	0.122	0.010
1966	0.078	0.011
1967	0.118	0.027
1968	0.287	0.407
1969	0.130	0.012
1970	0.179	0.036
1971	0.106	0.017
1972	0.080	0.012
1973	0.077	0.011
1974	0.127	0.012
1975	0.101	0.017
1976	0.130	0.011
1977	0.148	0.016
1978	0.130	0.013
1979	0.428	0.043
1980	0.142	0.022
1981	0.333	0.253
1982	0.127	0.012
1983	0.163	0.025
1984	0.152	0.019
1985	0.100	0.010
1986	0.127	0.015
1987	0.201	0.028

1988	0.081	0.011
1989	0.320	0.011
1990	0.094	0.010
1991	0.022	0.003
1992	0.134	0.021
1993	0.102	0.021
1994	0.465	0.032
1995	0.104	0.011
1996	0.353	0.244
1997	0.170	0.012
1998	0.103	0.015
1999	0.249	0.025
2000	0.069	0.009
2001	0.085	0.010
2002	0.064	0.010
2003	0.102	0.006
2004	0.154	0.014
2005	0.102	0.010

Ranked Yearly Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.4654	0.4068
2	0.4283	0.2528
3	0.3528	0.2436
4	0.3326	0.0426
5	0.3200	0.0365
6	0.2872	0.0317
7	0.2579	0.0283
8	0.2493	0.0274
9	0.2006	0.0250
10	0.1791	0.0246
11	0.1702	0.0222
12	0.1630	0.0215
13	0.1541	0.0205
14	0.1517	0.0202
15	0.1484	0.0188
16	0.1418	0.0169
17	0.1346	0.0166
18	0.1340	0.0161
19	0.1340	0.0150
20	0.1298	0.0148
21	0.1297	0.0144
22	0.1297	0.0140
23	0.1274	0.0135
24	0.1271	0.0125
25	0.1270	0.0123
26	0.1222	0.0123
27	0.1185	0.0118
28	0.1062	0.0116
29	0.1044	0.0116
30	0.1027	0.0115
31	0.1024	0.0115
32	0.1022	0.0113
33	0.1018	0.0110
34	0.1010	0.0109
35	0.1008	0.0108

36	0.0998	0.0102
37	0.0945	0.0102
38	0.0847	0.0101
39	0.0810	0.0101
40	0.0798	0.0098
41	0.0777	0.0095
42	0.0770	0.0091
43	0.0691	0.0089
44	0.0644	0.0062
45	0.0221	0.0026

POC #1
The Facility PASSED

The Facility PASSED.

Flow(CFS)	Predev	Dev	Percentage	Pass/Fail
0.0392	1331	173	12	Pass
0.0421	1226	141	11	Pass
0.0449	1163	131	11	Pass
0.0478	1035	121	11	Pass
0.0507	870	113	12	Pass
0.0536	705	106	15	Pass
0.0565	610	102	16	Pass
0.0593	549	98	17	Pass
0.0622	495	95	19	Pass
0.0651	463	92	19	Pass
0.0680	445	87	19	Pass
0.0709	405	82	20	Pass
0.0738	381	75	19	Pass
0.0766	342	72	21	Pass
0.0795	305	67	21	Pass
0.0824	269	65	24	Pass
0.0853	241	61	25	Pass
0.0882	214	56	26	Pass
0.0910	199	52	26	Pass
0.0939	190	51	26	Pass
0.0968	183	48	26	Pass
0.0997	170	48	28	Pass
0.1026	146	44	30	Pass
0.1054	121	40	33	Pass
0.1083	111	39	35	Pass
0.1112	99	38	38	Pass
0.1141	94	37	39	Pass
0.1170	88	37	42	Pass
0.1199	80	34	42	Pass
0.1227	77	30	38	Pass
0.1256	73	28	38	Pass
0.1285	65	26	40	Pass
0.1314	59	26	44	Pass
0.1343	58	23	39	Pass
0.1371	55	23	41	Pass
0.1400	54	22	40	Pass
0.1429	52	21	40	Pass
0.1458	50	21	42	Pass
0.1487	48	21	43	Pass

0.1515	43	19	44	Pass
0.1544	41	19	46	Pass
0.1573	37	18	48	Pass
0.1602	34	18	52	Pass
0.1631	32	18	56	Pass
0.1660	32	18	56	Pass
0.1688	31	17	54	Pass
0.1717	27	16	59	Pass
0.1746	25	15	60	Pass
0.1775	23	15	65	Pass
0.1804	21	15	71	Pass
0.1832	20	14	70	Pass
0.1861	17	14	82	Pass
0.1890	16	14	87	Pass
0.1919	16	14	87	Pass
0.1948	16	14	87	Pass
0.1976	16	13	81	Pass
0.2005	15	12	80	Pass
0.2034	13	12	92	Pass
0.2063	11	11	100	Pass
0.2092	11	9	81	Pass
0.2121	11	8	72	Pass
0.2149	11	8	72	Pass
0.2178	10	8	80	Pass
0.2207	10	8	80	Pass
0.2236	10	8	80	Pass
0.2265	10	8	80	Pass
0.2293	9	8	88	Pass
0.2322	9	8	88	Pass
0.2351	9	7	77	Pass
0.2380	9	6	66	Pass
0.2409	9	5	55	Pass
0.2437	9	5	55	Pass
0.2466	9	4	44	Pass
0.2495	9	4	44	Pass
0.2524	8	4	50	Pass
0.2553	8	3	37	Pass
0.2582	7	3	42	Pass
0.2610	7	3	42	Pass
0.2639	7	3	42	Pass
0.2668	7	2	28	Pass
0.2697	7	2	28	Pass
0.2726	7	2	28	Pass
0.2754	6	2	33	Pass
0.2783	6	2	33	Pass
0.2812	6	2	33	Pass
0.2841	6	2	33	Pass
0.2870	6	2	33	Pass
0.2898	5	2	40	Pass
0.2927	5	2	40	Pass
0.2956	5	2	40	Pass
0.2985	5	2	40	Pass
0.3014	5	2	40	Pass
0.3043	5	2	40	Pass
0.3071	5	2	40	Pass
0.3100	5	2	40	Pass
0.3129	5	2	40	Pass

0.3158	5	2	40	Pass
0.3187	5	2	40	Pass
0.3215	4	2	50	Pass
0.3244	4	2	50	Pass

Drawdown Time Results
Pond: Vault 9_1B

Days	Stage(feet)	Percent of Total Run Time
1	0.265	1.2002
2	0.592	0.6222
3	1.025	0.3357
4	1.564	0.1756
5	2.209	0.0660

Maximum Stage: 3.062
Drawdown Time: 05 00:00:10

Appendix C

Frequency Analysis Results

March 30, 2009 Geocon Incorporated Letter (Planning Area 1 Infiltration)

Rainfall Station Map

Meadowood Pre-Project Soil Information Exhibit

Meadowood Post-Project Soil Information Exhibit

Meadowood Pre-Project Slope Information Exhibit

Meadowood Post -Project Slope Information Exhibit

Meadowood Pre-Project Ground Cover Information Exhibit

Meadowood Post-Project Land Use Information Exhibit

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Drainage Basin 200/2000 is the second drainage basin North to South. labeled as 200 for pre-project and 2000 for post-project. The following acreages for all the unique combinations of soil type, slope analysis, land uses/ground cover, drainage basin boundaries were obtained with GIS Frequency analysis, please refer to Meadowood Pre and Post-project Soil Information Exhibits, Meadowood Pre and Post-project Slope Information Exhibits, Meadowood Pre-project Ground Cover Information Exhibit, and Meadowood Post-project Land Use Information Exhibit in Appendix C.

Basin 200 Pre-project
Total Area = 62.1 AC

Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	B	5% and Less	0.04
FOREST	B	5% - 10%	0.83
FOREST	B	10% - 20%	1.69
FOREST	B	20% and Greater	0.74
FOREST	C/D	10% - 20%	0.01
FOREST	C/D	20% and Greater	0.04
SHRUB	B	5% and Less	0.87
SHRUB	B	5% - 10%	0.22
SHRUB	B	10% - 20%	1.23
SHRUB	B	20% and Greater	3.79
SHRUB	C/D	5% and Less	2.71
SHRUB	C/D	5% - 10%	0.11
SHRUB	C/D	10% - 20%	1.88
SHRUB	C/D	20% and Greater	47.10
GRASS	B	5% - 10%	0.19
GRASS	B	10% - 20%	0.24
GRASS	B	20% and Greater	0.04
GRASS	C/D	10% - 20%	0.08
GRASS	C/D	20% and Greater	0.36

Basin 2000A Post-project (Disturbed)
Total Area = 51.0 AC

Land Use	Soil Type	Slopes	Area (AC)
FOREST	B	10% - 20%	0.01
FOREST	B	20% and Greater	0.01
SHRUB	B	5% and Less	0.30
SHRUB	B	10% - 20%	0.73
SHRUB	B	20% and Greater	1.28
SHRUB	C/D	5% and Less	2.52
SHRUB	C/D	5% - 10%	0.10
SHRUB	C/D	10% - 20%	1.04
SHRUB	C/D	20% and Greater	35.42
GRASS	B	20% and Greater	0.02
GRASS	C/D	5% and Less	0.19
GRASS	C/D	5% - 10%	0.13
GRASS	C/D	20% and Greater	2.95
LOTS	C/D	5% and Less	3.08
LOTS	C/D	20% and Greater	0.66
NON_CONTGS_SW	C/D	5% and Less	0.21
NON_CONTGS_SW	C/D	5% - 10%	0.43
ROAD	B	20% and Greater	0.01
ROAD	C/D	5% and Less	0.38
ROAD	C/D	5% - 10%	0.89
ROAD	C/D	20% and Greater	0.59

Basin 2000B Post-project (Clean Water)
Total Area = 8.5 AC

Land Use	Soil Type	Slopes	Area (AC)
SHRUB	B	20% and Greater	0.01
SHRUB	C/D	5% and Less	0.12
SHRUB	C/D	5% - 10%	0.01
SHRUB	C/D	10% - 20%	0.32
SHRUB	C/D	20% and Greater	7.64
GRASS	C/D	20% and Greater	0.43

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Drainage basin 300/3000 is the third basin North to South, labeled as 300 for pre-project and 3000 for post-project. The following acreages for all the unique combinations of soil type, slope analysis, land uses/ground cover, drainage basin boundaries were obtained with GIS Frequency analysis, please refer to Meadowood Pre and Post-project Soil Information Exhibits, Meadowood Pre and Post-project Slope Information Exhibits, Meadowood Pre-project Ground Cover Information Exhibit, and Meadowood Post-project Land Use Information Exhibit in Appendix C.

Basin 300 Pre-project
Total Area = 58.5 AC

Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	C/D	5% and Less	0.49
FOREST	C/D	5% - 10%	0.02
FOREST	C/D	10% - 20%	1.41
FOREST	C/D	20% and Greater	10.31
FOREST	B	5% and Less	0.33
FOREST	B	5% - 10%	1.95
FOREST	B	10% - 20%	7.46
FOREST	B	20% and Greater	2.72
SHRUB	B	10% - 20%	0.01
SHRUB	B	20% and Greater	0.15
SHRUB	C/D	5% and Less	0.63
SHRUB	C/D	5% - 10%	0.16
SHRUB	C/D	10% - 20%	0.72
SHRUB	C/D	20% and Greater	31.82
NONTURF_GRASSLAND	B	5% - 10%	0.21
NONTURF_GRASSLAND	B	10% - 20%	0.05
NONTURF_GRASSLAND	C/D	5% and Less	0.03
NONTURF_GRASSLAND	C/D	10% - 20%	0.01

Basin 3000 Post-project
Total Area = 61.6 AC

Land Use	Soil Type	Slopes	Area (AC)
FOREST	C/D	5% and Less	0.26
FOREST	C/D	5% - 10%	0.01
FOREST	C/D	10% - 20%	0.25
FOREST	C/D	20% and Greater	5.44
FOREST	B	10% - 20%	0.01
FOREST	B	20% and Greater	0.13
SHRUB	B	10% - 20%	0.01
SHRUB	B	20% and Greater	0.02
SHRUB	C/D	5% and Less	0.62
SHRUB	C/D	5% - 10%	0.16
SHRUB	C/D	10% - 20%	0.70
SHRUB	C/D	20% and Greater	31.71
GRASS	C/D	5% and Less	0.62
GRASS	C/D	20% and Greater	5.37
LOTS	C/D	5% and Less	8.47
LOTS	C/D	20% and Greater	2.13
NON_CONTGS_SW	C/D	5% and Less	1.30
NON_CONTGS_SW	C/D	5% - 10%	0.62
ROAD	C/D	5% and Less	2.62
ROAD	C/D	5% - 10%	1.19

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Drainage basin 400/4000 is located at southwest corner of drainage basin 300, labeled as 400 for pre-project and 4000 for post-project. The following acreages for all the unique combinations of soil type, slope analysis, land uses/ground cover, drainage basin boundaries were obtained with GIS Frequency analysis, please refer to Meadowood Pre and Post-project Soil Information Exhibits, Meadowood Pre and Post-project Slope Information Exhibits, Meadowood Pre-project Ground Cover Information Exhibit, and Meadowood Post-project Land Use Information Exhibit in Appendix C.

Basin 400 Pre-project
Total Area = 11.1 AC

Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	B	5% and Less	0.02
FOREST	B	5.001% - 10%	0.92
FOREST	B	10.001% - 20%	2.61
FOREST	B	20.001% and Greater	0.02
FOREST	C/D	5% and Less	0.28
FOREST	C/D	5.001% - 10%	0.17
FOREST	C/D	10.001% - 20%	3.80
FOREST	C/D	20.001% and Greater	2.73
NONTURF_GRASSLAND	B	5% and Less	0.02
NONTURF_GRASSLAND	B	5.001% - 10%	0.02
NONTURF_GRASSLAND	B	10.001% - 20%	0.18
NONTURF_GRASSLAND	C/D	5% and Less	0.04
NONTURF_GRASSLAND	C/D	10.001% - 20%	0.26
NONTURF_GRASSLAND	C/D	20.001% and Greater	0.01

Basin 4000 Post-project
Total Area = 11.2 AC

Land Use	Soil Type	Slopes	Area (AC)
GRASS	C/D	5% and Less	0.34
GRASS	C/D	5% - 10%	0.30
GRASS	C/D	20% and Greater	3.94
LOTS	C/D	5% and Less	4.36
LOTS	C/D	20% and Greater	0.70
NON_CONTGS_SW	C/D	5% and Less	0.16
NON_CONTGS_SW	C/D	5% - 10%	0.35
ROAD	C/D	5% and Less	0.33
ROAD	C/D	5% - 10%	0.74

Basin 7 is located south of Basin 3 and Basin 4. This drainage basin includes two subbasins labeled A' and 'B'.

The following information is for Basin A and includes the unique combinations of soil type, slope analysis, land uses/ground cover, drainage basin boundaries were obtained with GIS Frequency analysis, please refer to Meadowood Pre and Post-project Soil Information Exhibits, Meadowood Pre and Post-project Slope Information Exhibits, Meadowood Pre-project Cover Information Exhibit, and Meadowood Post-project Land Use Information Exhibit in Appendix C.

Basin 700A Pre-Project
Total Area = 192.23 acres

LandUse/Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	5% and Less	B	4.52
FOREST	5.001% - 10%	B	18.53
FOREST	10.001% - 20%	B	20.78
FOREST	20.001% and Greater	B	5.48
GRASS	5% and Less	B	2.40
GRASS	5.001% - 10%	B	2.54
GRASS	10.001% - 20%	B	1.90
GRASS	20.001% and Greater	B	0.13
GRASS	5.001% - 10%	D	0.02
FOREST	5% and Less	C/D	5.59
FOREST	5.001% - 10%	C/D	3.68
FOREST	10.001% - 20%	C/D	34.94
FOREST	20.001% and Greater	C/D	80.49
SHRUB	5% and Less	C/D	1.19
SHRUB	5.001% - 10%	C/D	0.04
SHRUB	10.001% - 20%	C/D	0.41
SHRUB	10.001% - 20%	D	0.68
SHRUB	20.001% and Greater	C/D	8.92

Basin 7000A Post-Project
Total Area = 195 acres

LandUse/Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	5% and Less	C	4.28
FOREST	5% - 10%	C	0.23
FOREST	10% - 20%	C	2.86
FOREST	20% and Greater	C	45.06
SHRUB	5% and Less	C	0.95
SHRUB	5% - 10%	C	0.05
SHRUB	10% - 20%	C	1.02
SHRUB	20% and Greater	C	9.08
GRASS	5% and Less	C	7.41
GRASS	5% - 10%	C	0.01
GRASS	10% - 20%	C	1.45
GRASS	20% and Greater	C	39.78
LOTS	5% and Less	C	35.20
MULTI FAM	5% and Less	C	15.45
_NON_CONTGS_SW	5% and Less	C	2.64
_NON_CONTGS_SW	5% and Less	C	0.92
_NON_CONTGS_SW	5% - 10%	C	1.98
_NON_CONTGS_SW	10% - 20%	C	1.01
ROAD	5% and Less	C	15.36
ROAD	5% - 10%	C	4.73
ROAD	10% - 20%	C	1.99
ROAD	20% and Greater	C	1.89
DRIVEWAY	flat	C	1.65

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Drainage basin 700B/7000B is the fourth drainage basin South to North, labeled as 700 for pre-project and 7000 for post-project. The following acreages for all the unique combinations of soil type, slope analysis, land uses/ground cover, drainage basin boundaries were obtained with GIS Frequency analysis, please refer to Meadowood Pre and Post-project Soil Information Exhibits, Meadowood Pre and Post-project Slope Information Exhibits, Meadowood Pre-project Ground Cover Information Exhibit, and Meadowood Post-project Land Use Information Exhibit in Appendix C.

Basin 700B Pre-project
Total Area = 43.8 AC

Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	B	5% and Less	0.43
FOREST	B	5% - 10%	1.05
FOREST	B	10% - 20%	0.78
FOREST	B	20% and Greater	0.08
FOREST	C/D	5% and Less	0.10
FOREST	C/D	5% - 10%	0.03
FOREST	C/D	10% - 20%	0.16
FOREST	C/D	20% and Greater	10.13
SHRUB	B	5% and Less	0.14
SHRUB	B	5% - 10%	0.42
SHRUB	B	10% - 20%	0.31
SHRUB	B	20% and Greater	1.58
SHRUB	C/D	5% and Less	0.38
SHRUB	C/D	5% - 10%	0.04
SHRUB	C/D	10% - 20%	0.41
SHRUB	C/D	20% and Greater	12.56
GRASS	B	5% and Less	5.20
GRASS	B	5% - 10%	5.36
GRASS	B	10% - 20%	3.63
GRASS	B	20% and Greater	0.65
GRASS	C/D	5% and Less	0.03
GRASS	C/D	5% - 10%	0.08
GRASS	C/D	10% - 20%	0.18
GRASS	C/D	20% and Greater	0.04

Basin 7000B Post-project
Total Area = 45.3 AC

Land Use	Soil Type	Slopes	Area (AC)
FOREST	C/D	5% and Less	0.10
FOREST	C/D	5% - 10%	0.03
FOREST	C/D	10% - 20%	0.15
FOREST	C/D	20% and Greater	10.13
SHRUB	B	5% and Less	0.14
SHRUB	B	5% - 10%	0.42
SHRUB	B	10% - 20%	0.31
SHRUB	B	20% and Greater	1.58
SHRUB	C/D	5% and Less	0.38
SHRUB	C/D	5% - 10%	0.04
SHRUB	C/D	10% - 20%	0.41
SHRUB	C/D	20% and Greater	12.56
GRASS	B	5% and Less	0.09
GRASS	B	5% - 10%	0.59
GRASS	B	10% - 20%	0.28
GRASS	B	20% and Greater	0.04
GRASS	C/D	5% and Less	0.79
GRASS	C/D	5% - 10%	0.07
GRASS	C/D	10% - 20%	0.09
GRASS	C/D	20% and Greater	0.27
MEDIAN	C/D	5% and Less	0.49
NON_CONTGS_SW	C/D	5% and Less	0.15
NON_CONTGS_SW_HRC	C/D	5% and Less	1.01
ROAD	C/D	5% and Less	2.77
SCHOOL	C/D	5% and Less	10.33
SCHOOL	C/D	20% and Greater	2.08

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Basin 8 is second basin up from South to North, labeled as 800 for pre-project and 8000 for post-project. The following is the results of the GIS Frequency analysis which was entered into San Diego Hydrology Model (SDHM) and the associated range of controlled outflow (20% of pre-project Q5 to pre-project Q10) and pond volume outputs from SDHM.

Basin 800A (with out Buffer) Pre-project
Total Area = 27.9 AC

Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	B	5% and Less	0.21
FOREST	C/D	5% and Less	0.02
FOREST	C/D	5% - 10%	0.01
FOREST	C/D	10% - 20%	0.09
FOREST	C/D	20% and Greater	3.96
SHRUB	B	5% and Less	0.06
SHRUB	B	5% - 10%	0.10
SHRUB	B	10% - 20%	0.11
SHRUB	B	20% and Greater	1.66
SHRUB	C/D	5% and Less	0.13
SHRUB	C/D	5% - 10%	0.01
SHRUB	C/D	10% - 20%	0.18
SHRUB	C/D	20% and Greater	9.71
GRASS	B	5% and Less	8.42
GRASS	B	5% - 10%	0.70
GRASS	B	10% - 20%	0.80
GRASS	B	20% and Greater	0.10
GRASS	C/D	5% and Less	0.37
GRASS	C/D	5% - 10%	0.64
GRASS	C/D	10% - 20%	0.51
GRASS	C/D	20% and Greater	0.08

Basin 8000A Post-project
Total Area = 26.8 AC

Land Use	Soil Type	Slopes	Area (AC)
FOREST	C/D	5% and Less	0.01
FOREST	C/D	10% - 20%	0.08
FOREST	C/D	20% and Greater	2.66
SHRUB	B	5% and Less	0.05
SHRUB	B	5% - 10%	0.09
SHRUB	B	10% - 20%	0.05
SHRUB	B	20% and Greater	1.66
SHRUB	C/D	5% and Less	0.11
SHRUB	C/D	10% - 20%	0.13
SHRUB	C/D	20% and Greater	7.77
GRASS	B	5% and Less	0.02
GRASS	B	5% - 10%	0.14
GRASS	B	10% - 20%	0.02
GRASS	B	20% and Greater	0.01
GRASS	C/D	5% and Less	1.93
GRASS	C/D	5% - 10%	0.12
GRASS	C/D	20% and Greater	0.48
MEDIAN	C/D	5% and Less	0.47
NON_CONTGS_SW	C/D	5% and Less	0.23
NON_CONTGS_SW_HRC	C/D	5% and Less	0.91
PA1LOTS	C/D	5% and Less	4.5
PA1LOTS	C/D	20% and Greater	0.12
ROAD	C/D	5% and Less	5.22

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Basin 8 is second basin up from South to North, labeled as 800 for pre-project and 8000 for post-project. The following is the results of the GIS Frequency analysis which was entered into San Diego Hydrology Model (SDHM) and the associated range of controlled outflow (20% of pre-project Q5 to pre-project Q10) and pond volume outputs from SDHM.

Basin 800B (without Buffer) Pre-project
Total Area = 22.8 AC

Ground Cover	Soil Type	Slopes	Area (AC)
FOREST	B	5% and Less	2.25
FOREST	B	5% - 10%	1.20
FOREST	B	10% - 20%	0.91
FOREST	B	20% and Greater	0.08
FOREST	C/D	5% and Less	0.22
FOREST	C/D	5% - 10%	0.46
FOREST	C/D	10% - 20%	0.65
FOREST	C/D	20% and Greater	5.65
SHRUB	C/D	5% and Less	0.03
SHRUB	C/D	10% - 20%	0.02
SHRUB	C/D	20% and Greater	2.51
GRASS	B	5% and Less	5.87
GRASS	B	5% - 10%	0.12
GRASS	B	10% - 20%	0.31
GRASS	B	20% and Greater	0.01
GRASS	C/D	5% and Less	0.70
GRASS	C/D	5% - 10%	1.20
GRASS	C/D	10% - 20%	0.36
GRASS	C/D	20% and Greater	0.12
ROAD	C/D	5% and Less	0.07
ROAD	C/D	5% - 10%	0.01

Basin 8000B Post-project
Total Area = 26.1 AC

Land Use	Soil Type	Slopes	Area (AC)
FOREST	B	5% and Less	0.06
FOREST	B	5% - 10%	0.08
FOREST	C/D	5% and Less	0.20
FOREST	C/D	5% - 10%	0.43
FOREST	C/D	10% - 20%	0.64
FOREST	C/D	20% and Greater	6.89
SHRUB	C/D	5% and Less	0.04
SHRUB	C/D	10% - 20%	0.03
SHRUB	C/D	20% and Greater	4.00
GRASS	C/D	5% and Less	1.44
GRASS	C/D	5% - 10%	0.20
GRASS	C/D	20% and Greater	0.16
MEDIAN	C/D	5% and Less	0.12
NON_CONTGS_SW_HRC	C/D	5% and Less	0.22
PA1LOTS	C/D	5% and Less	7.09
PA1LOTS	C/D	20% and Greater	0.28
ROAD	C/D	5% and Less	4.20

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Basin 9 is the most Southerly basin, labeled as 900 for pre-project and 9000 for post-project. The following is the results of the GIS Frequency analysis which was entered into San Diego Hydrology Model (SDHM) and the associated range of controlled outflow (20% of pre-project Q5 to pre-project Q10) and pond volume outputs from SDHM.

Basin 900 Pre-project
Total Area = 21.4 AC

Ground Cover	Soil Type	Slopes	Area (AC)
MEADOWOOD			
FOREST	A	5% and Less	0.05
FOREST	A	5% - 10%	0.05
FOREST	A	10% - 20%	0.02
FOREST	A	20% and Greater	0.09
FOREST	B	5% and Less	4.67
FOREST	B	5% - 10%	1.20
FOREST	B	10% - 20%	0.20
FOREST	B	20% and Greater	1.10
FOREST	C/D	5% and Less	0.13
FOREST	C/D	5% - 10%	0.49
FOREST	C/D	10% - 20%	0.88
FOREST	C/D	20% and Greater	3.76
SHRUB	A	10% - 20%	0.02
SHRUB	A	20% and Greater	0.05
SHRUB	C/D	5% and Less	0.01
SHRUB	C/D	10% - 20%	0.08
SHRUB	C/D	20% and Greater	1.76
ROAD	C/D	5% and Less	0.28
ROAD	C/D	5% - 10%	4.15
ROAD	C/D	10% - 20%	0.40
ROAD	C/D	20% and Greater	0.09
			19.48
SEWER TREATMENT			
FOREST	A	5% and Less	1.63
FOREST	A	10% - 20%	0.01
FOREST	A	20% and Greater	0.01
ROAD	C/D	5% and Less	0.16
ROAD	C/D	5% - 10%	0.04
ROAD	C/D	10% - 20%	0.02
ROAD	C/D	20% and Greater	0.05
			1.92

Basin 9000 Post-project
Total Area = 19.1 AC

Land Use	Soil Type	Slopes	Area (AC)
MEADOWOOD			
FOREST	A	5% and Less	0.05
FOREST	A	5% - 10%	0.03
FOREST	A	10% - 20%	0.02
FOREST	B	5% and Less	1.90
FOREST	B	5% - 10%	0.61
FOREST	B	10% - 20%	0.18
FOREST	B	20% and Greater	0.03
FOREST	C/D	5% and Less	0.14
FOREST	C/D	5% - 10%	0.52
FOREST	C/D	10% - 20%	0.87
FOREST	C/D	20% and Greater	4.10
SHRUB	A	20% and Greater	0.05
SHRUB	B	10% - 20%	0.02
SHRUB	C/D	5% and Less	0.01
SHRUB	C/D	10% - 20%	0.08
SHRUB	C/D	20% and Greater	1.77
GRASS	C/D	5% and Less	0.36
GRASS	C/D	20% and Greater	0.50
MEDIAN	C/D	5% and Less	0.17
NON_CONTGS_SW_HRC	C/D	5% and Less	0.26
ROAD	C/D	5% and Less	1.59
ROAD	C/D	5% - 10%	3.57
ROAD	C/D	10% - 20%	0.10
ROAD	C/D	20% and Greater	0.01
			16.94
SEWER TREATMENT			
DIRT	C/D	5% and Less	1.06
DIRT	C/D	5% - 10%	0.07
DIRT	C/D	20% and Greater	0.02
ROOF	C/D	5% and Less	0.21
SEWER_TRMNT	C/D	5% and Less	0.80
			2.16

Project No. 06931-42-01
March 30, 2009

Pardee Homes
12626 High Bluff Drive, Suite 100
San Diego, California 92130

Attention: Ms. Karen Kosup

Subject: MEADOWOOD (PANKEY RANCH)
SAN DIEGO COUNTY, CALIFORNIA
PLANNING AREA 1 INFILTRATION

References: *Update Geotechnical Investigation, Meadowood (Pankey Ranch), San Diego, California,* prepared by Geocon Incorporated dated November 20, 2006 (Project No. 06931-42-01).

Dear Ms. Kosup:

In accordance with your request, we have prepared this letter to provide information with respect to infiltration rates for Planning Area 1 at the subject site. It is our understanding that Pardee is proposing to use hydromodification in Planning Area 1 to satisfy County of San Diego and State of California water quality requirements, and that an estimate of the as-graded soil infiltration rate is required for the hydromodification analysis.

Based on our review of the referenced geotechnical investigation, Planning Area 1 is underlain by alluvium and terrace deposits. Geotechnical borings performed for the referenced investigation encountered interbedded sand, silty sand, clayey sand, silty clay and clayey silt. The sandy portions of the soils should provide moderate to good infiltration characteristics. The silty and clayey portions generally exhibit poor infiltration.

It is our understanding that select grading will be performed in Planning Area 1. Grading operations will include dewatering, removal of compressible and potentially liquefiable alluvium, burying rock generated from cuts on other portions of the project, replacing on-site soils as compacted fill, and capping the upper 5 feet of Planning Area 1 with select sandy soil.

Laboratory or field tests have not been performed to assess infiltration rates of actual on-site soils. However, it is our opinion that portions of the on-site sandy soils are capable of exhibiting an infiltration rate of 1 inch/hour. We recommend prior to and/or during grading that field and/or laboratory tests be performed on select capping soil to assess permeability and infiltration characteristics.

Should you have any questions regarding this letter, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Rodney C. Mikesell
GE 2533

RCM:dmc

(2) Addressee
(2) Rick Engineering Company
Attention: Ms. Karen Van Ert

Downloaded 10/10/08 from HMP TAC ftp site

PROJECT SITE

San Onofre
Sandia Creek Rd
Rainbow Camp
Oak Flats
Fallbrook
Pala - SW
Couser Canyon
Palomar Observ
Coyote Creek
Birch Hill
Cole Grade Road
Bonsall
Rincon Springs
La Jolla Amago
Borrego Palm
Lake Henshaw
Ranchita
Borrego CRS
Oceanside
Loma Alta
Buena Vista
Valley Center
Deer Springs
Skyline Ranch
Lake Wohlford
Agua Hedionda
Carlsbad
San Marcos CRS
Escondido
Sutherland Res
Volcan Mountain
Ocotillo Wells
Harmony Grove
Santa Isabel
San Marcos
Lake Hodges
San Felipe
El Camino del Norte
Julian
Witch Creek FS
Encinitas
Ramona
San Elijo Lagoon
Rancho Bernardo
Barona
Fine Hills FS
Mt Woodson
Solana Beach
SD Country Estates
Lake Cuyamaca
Ranchita Morgarita
Agua Caliente
Poway
Miramar Lake
San Vicente Res
El Capitan Res
Echo Del
Cactus County Park
Flinn Springs
Viejas Mountain
Descanso R.S.
Mount Laguna
Kearny Mesa
Santee
Los Coches Cr
Harbison Canyon
Lake Murray
Granite Hills
Fashion Valley
La Mesa
Lindbergh Field
Roads Div
Bonita Road
Bonita
Barrett Dam
Morena Lake
Tierra del Sol
Plaza Bonita
Thousand Trails
Campo
Lower Otay Res
Dulzura Summit
Potrero Park
Marron Valley
Puente San Jose II
San Ysidro
Rio Alamar @ Toll Bridge
Loma Tova
Rancho Tecate
Rodriguez Reservoir
MEXICO

N

0 4 8
SCALE IN MILES

LEGEND
RIVERS/CREEKS
WATERSHEDS
PRECIPITATION

Bonita● STATION TO BE INCLUDED IN HYDROMODIFICATION RAINFALL DATA SET

Bonsall★ OTHER ALERT STATION

FIGURE 1

RAINFALL STATION MAP

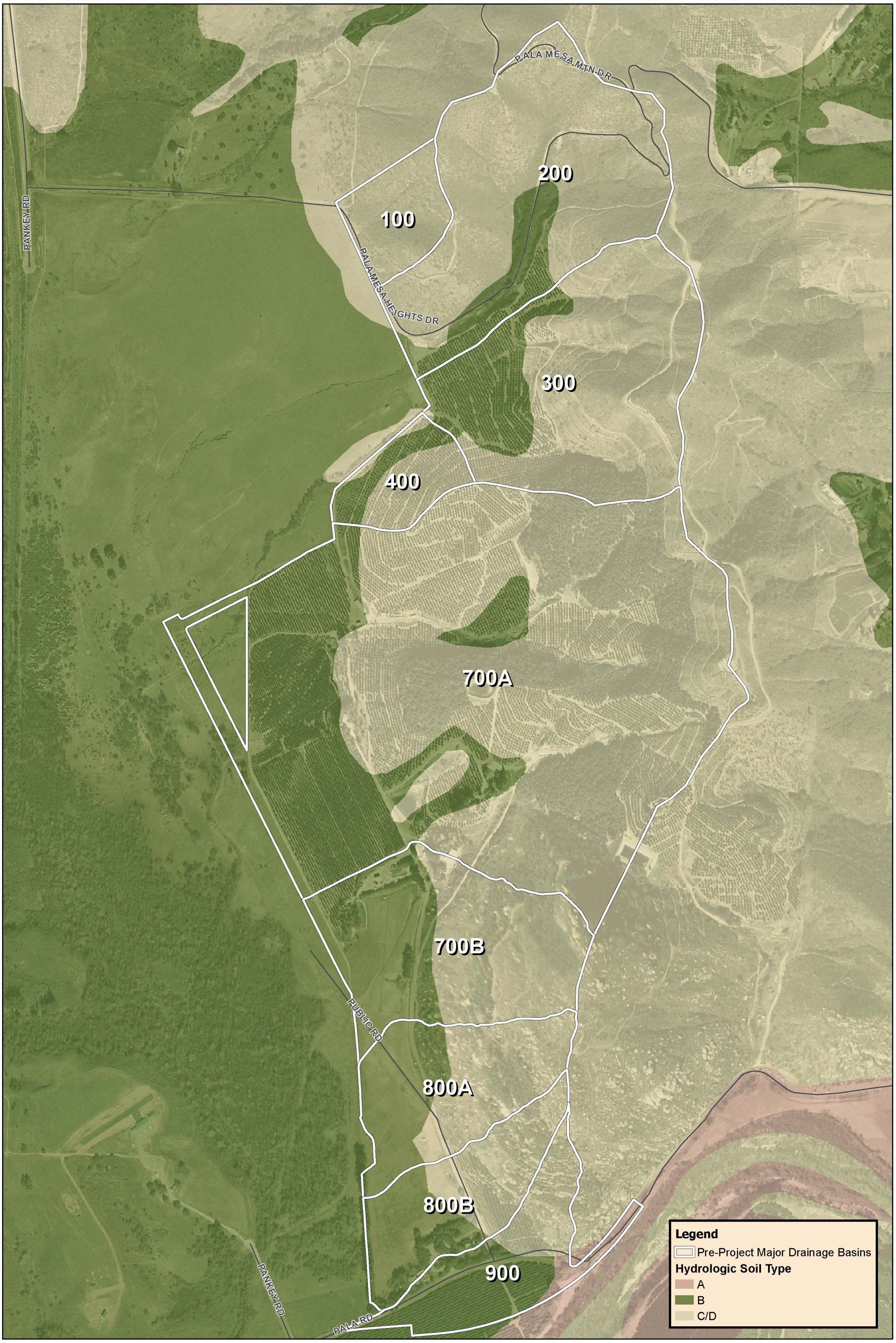
PROJECT LOCATION	DATE	PROJECT NUMBER
SAN DIEGO COUNTY, CALIFORNIA	OCT 2008	133904

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

Layout: B landscape | Ref Files : San Diego County – Aerial Transportation.dwg : Water_Shede.dwg : DEMO/Rainfall Stations – Hourly Alerts.dwg

Projects\San Diego County\133904 – SDC . . . . Rainfall Stations – Hourly Alerts.dwg

bbennetts



Meadowood Pre-Project Soil Information

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Exhibit Date: July 17, 2009

REC JN: 15956

N

0 300 600 1,200 Feet

Data Sources:
SSURGO Soils: 2007
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY

Meadowood Post-Project Soil Information

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Exhibit Date: July 17, 2009

REC JN: 15956

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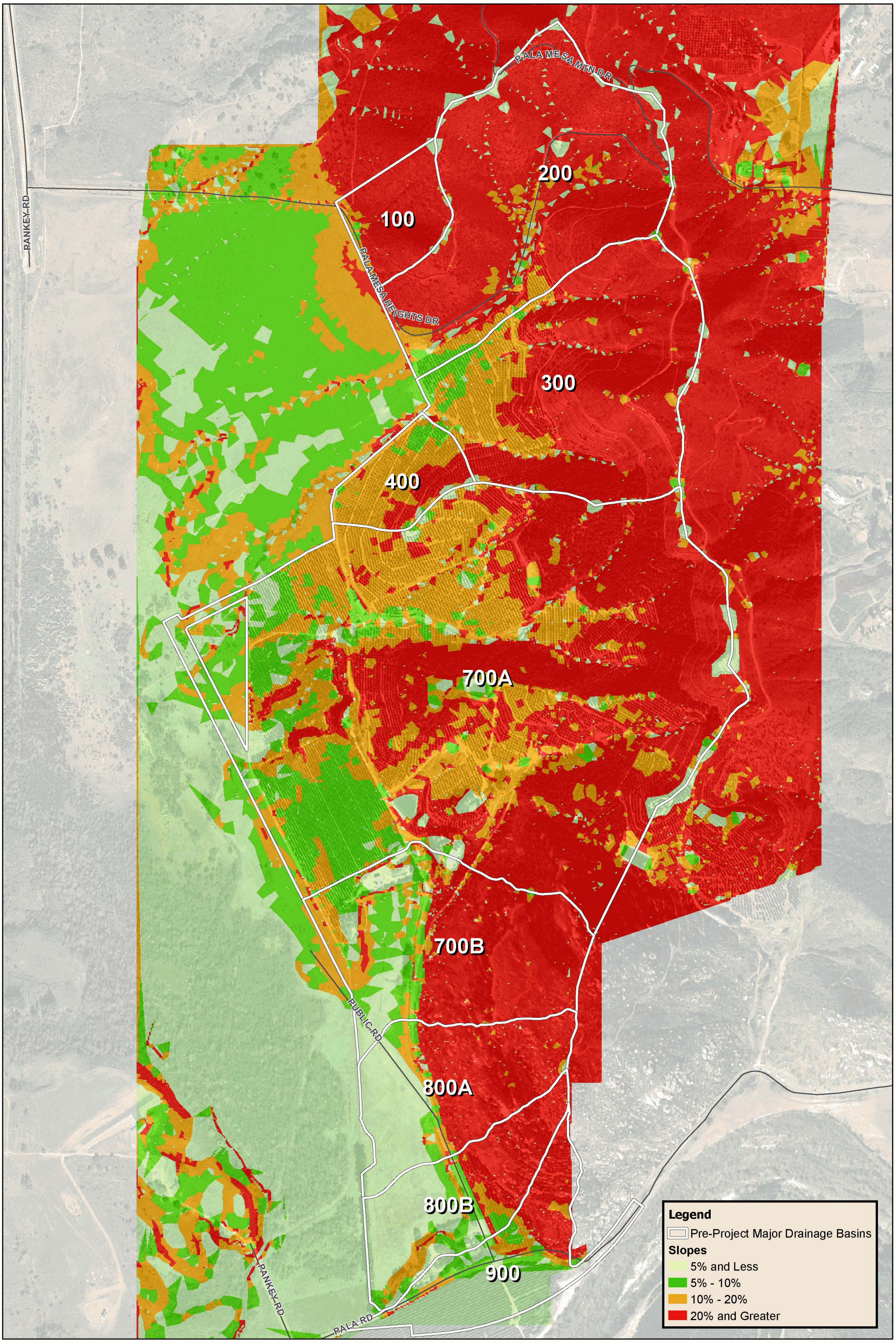
Data Sources:
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY



Meadowood Pre-Project Slope Information

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Exhibit Date: July 17, 2009

REC JN: 15956

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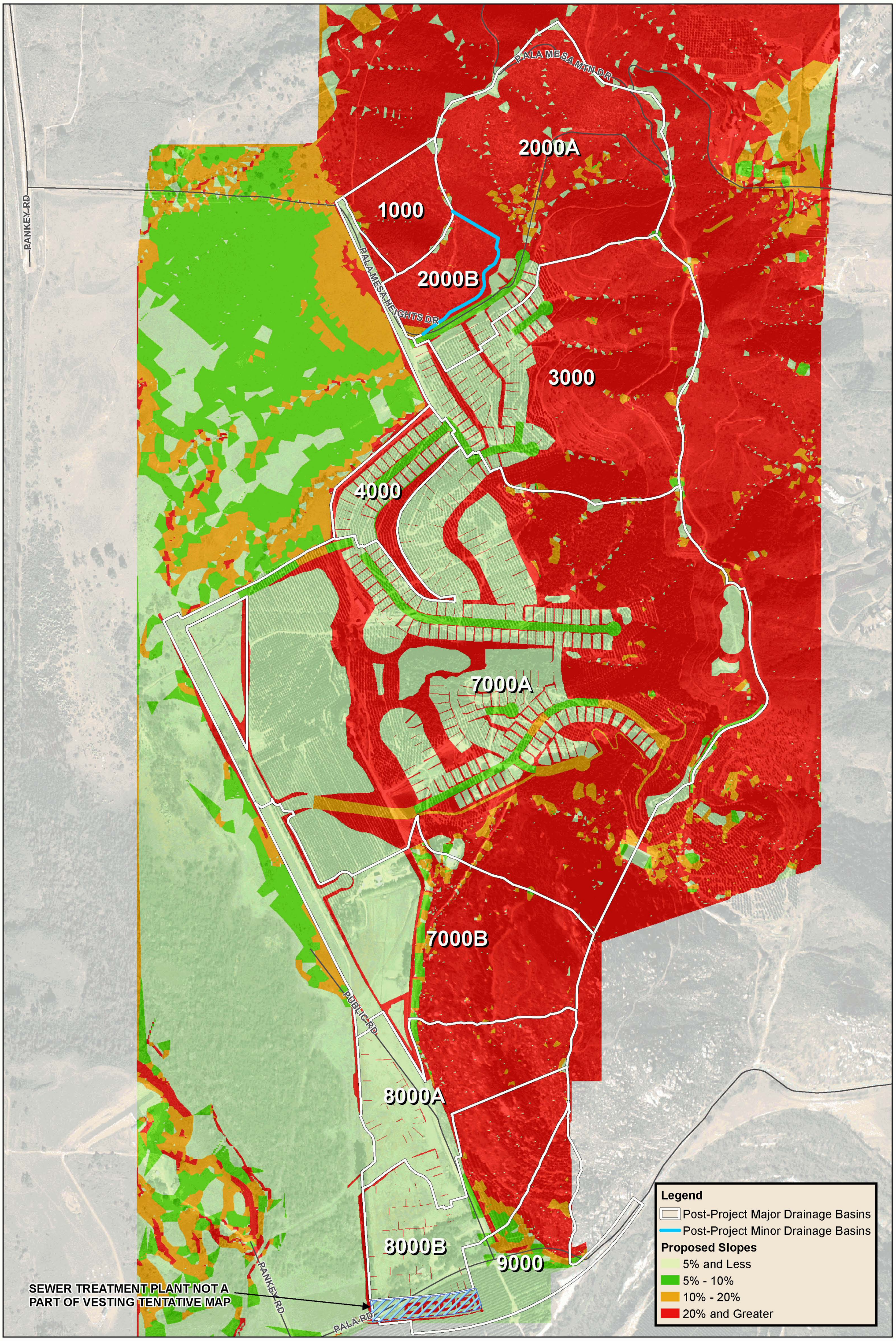
Data Sources:
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY



Meadowood Post-Project Slope Information

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REC JN: 15956

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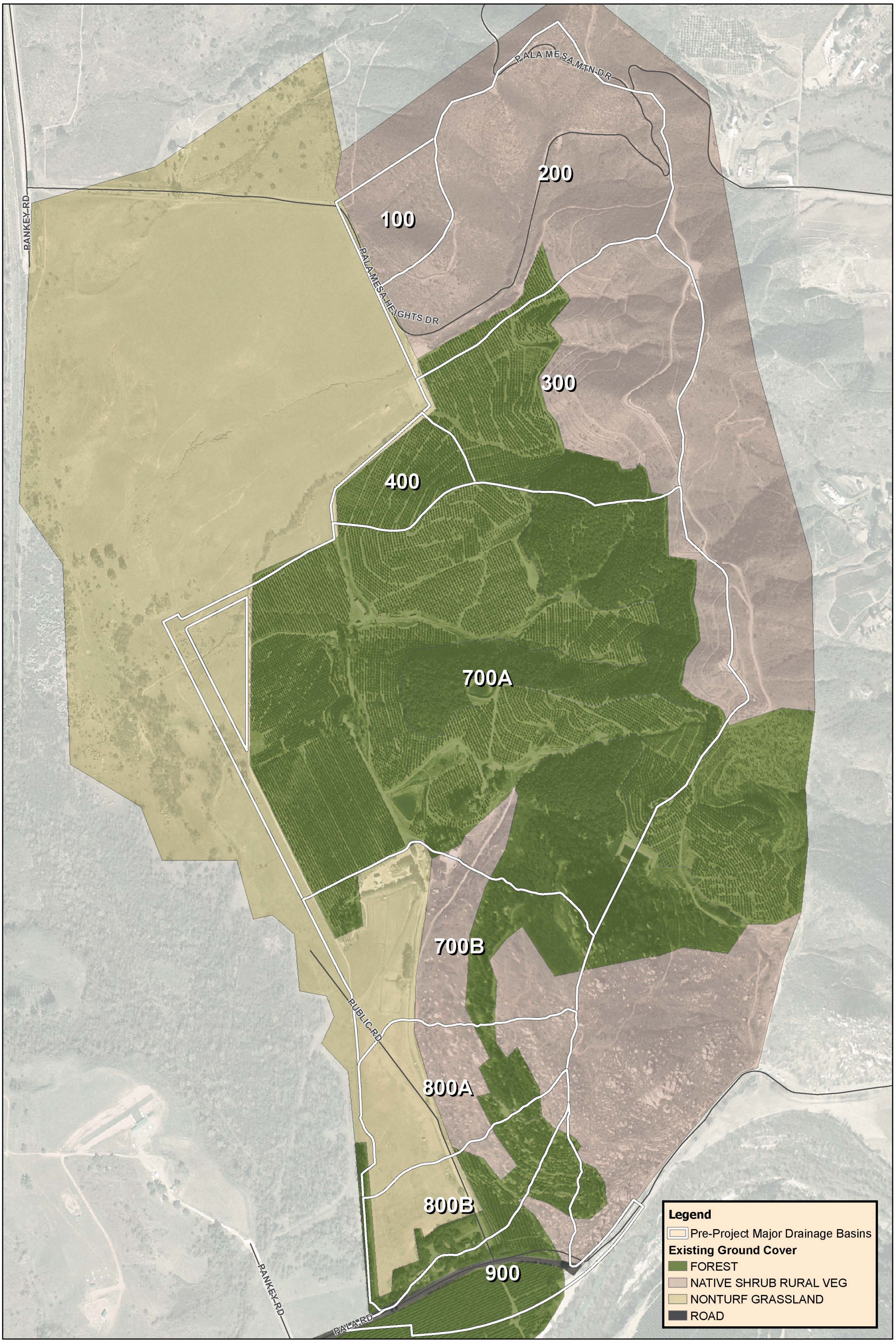
Data Sources:
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY



Meadowood Pre-Project Ground Cover Information

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Exhibit Date: July 17, 2009

REC JN: 15956

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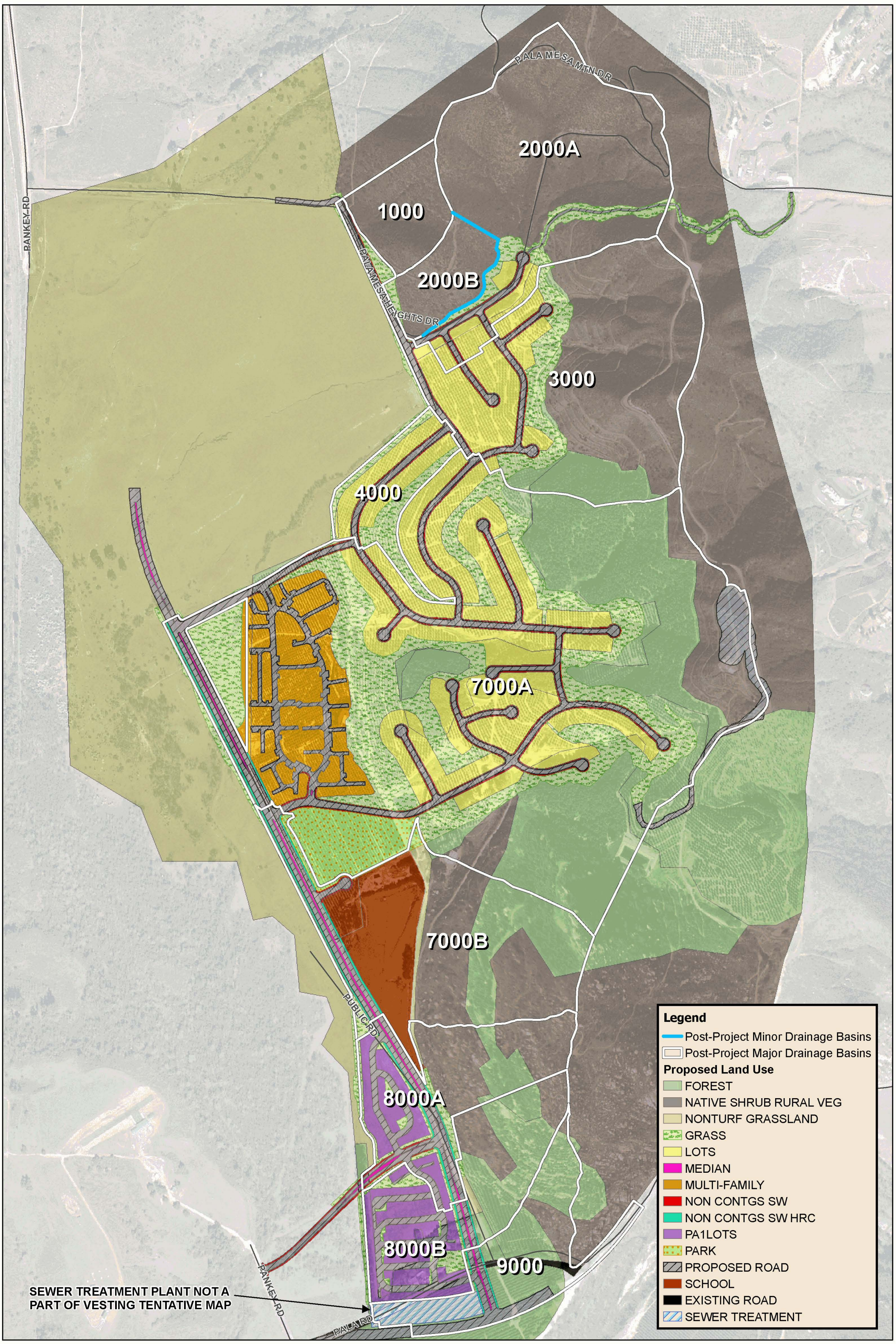
Data Sources:
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY



Meadowood Post-Project Land Use Information

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Exhibit Date: July 17, 2009

REC JN: 15956

N

0 300 600 1,200 Feet

Data Sources:
Landiscor Aerial Photo: January 2006

RICK ENGINEERING COMPANY

Appendix D

Summary of Drainage Basin Hydromodification Management Measures

J-15956
January-09
Revised: 'August 18, 2009
Appendix D

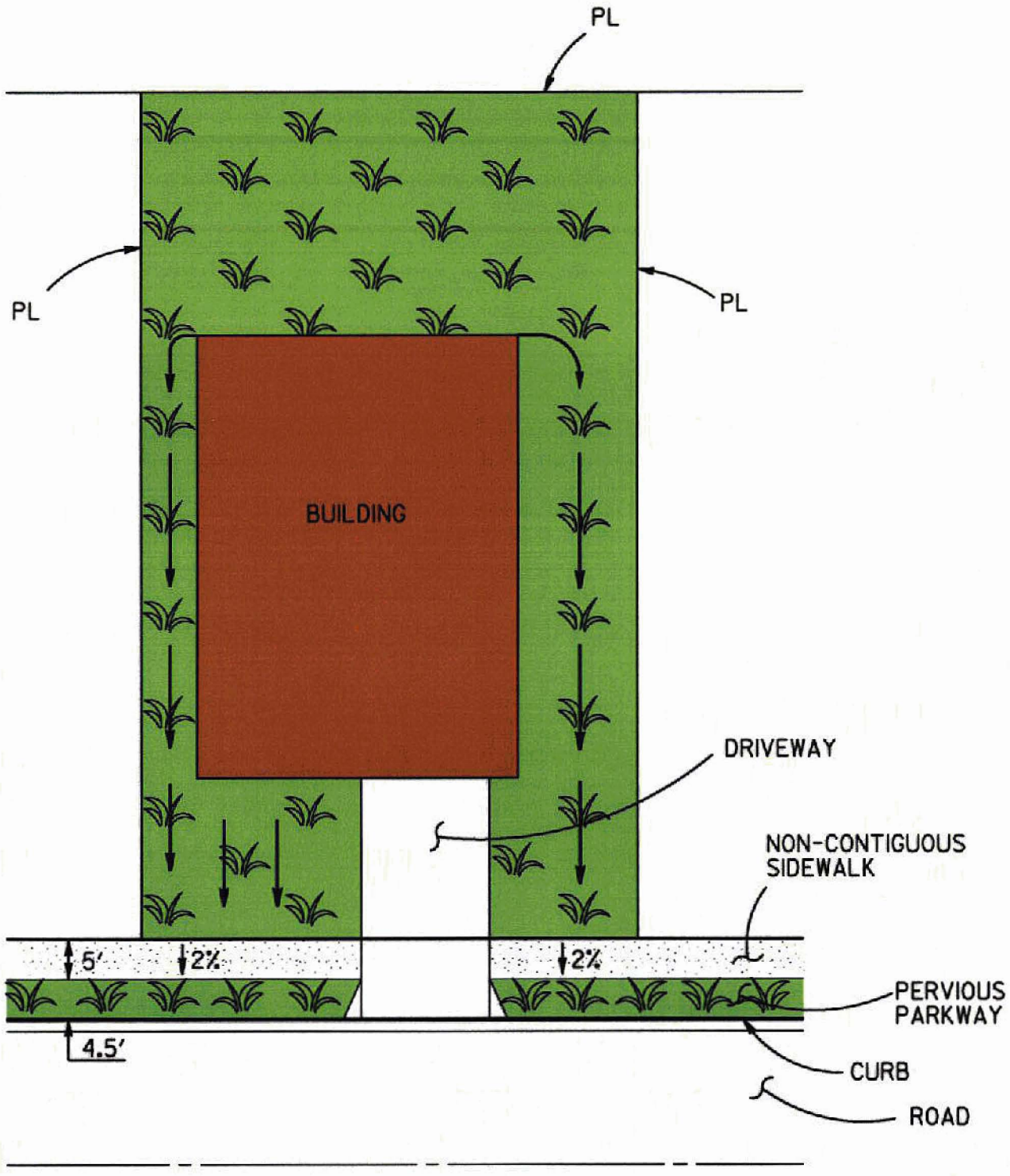
Meadowood Hydromodification Management Measurements

Basin Number	Sub Basin Number	Post-Project Area (AC)	Hydromodification Management Measures
200/2000	200A/2000A	51.00	Noncontiguous Sidewalks*, Dispersed Roof Flow Through Yard*, Pond
	200B/2000B	8.50	N/A
300/3000		61.60	Noncontiguous Sidewalks*, Dispersed Roof Flow Through Yard*, Pond
400/4000		11.20	Noncontiguous Sidewalks*, Dispersed Roof Flow Through Yard*, Pond
700/7000	700A/7000A	195.00	Noncontiguous Sidewalks*, Roof Flow Through Yard*, Pond
	700B/7000B	45.30	Noncontiguous Sidewalks*, Pond
800/8000	800A/8000A	27.20	Dispersed Roof Flow Through Yard*, Porous Driveways, Pond (Infiltration Utilized)
	800B/8000B	23.70	Dispersed Roof Flow Through Yard*, Porous Driveways, Pond (Infiltration Utilized)
900/9000	900A/9000A	16.94	Noncontiguous Sidewalks*, Underground Vault
	900B/9000B	2.16	Underground Vault

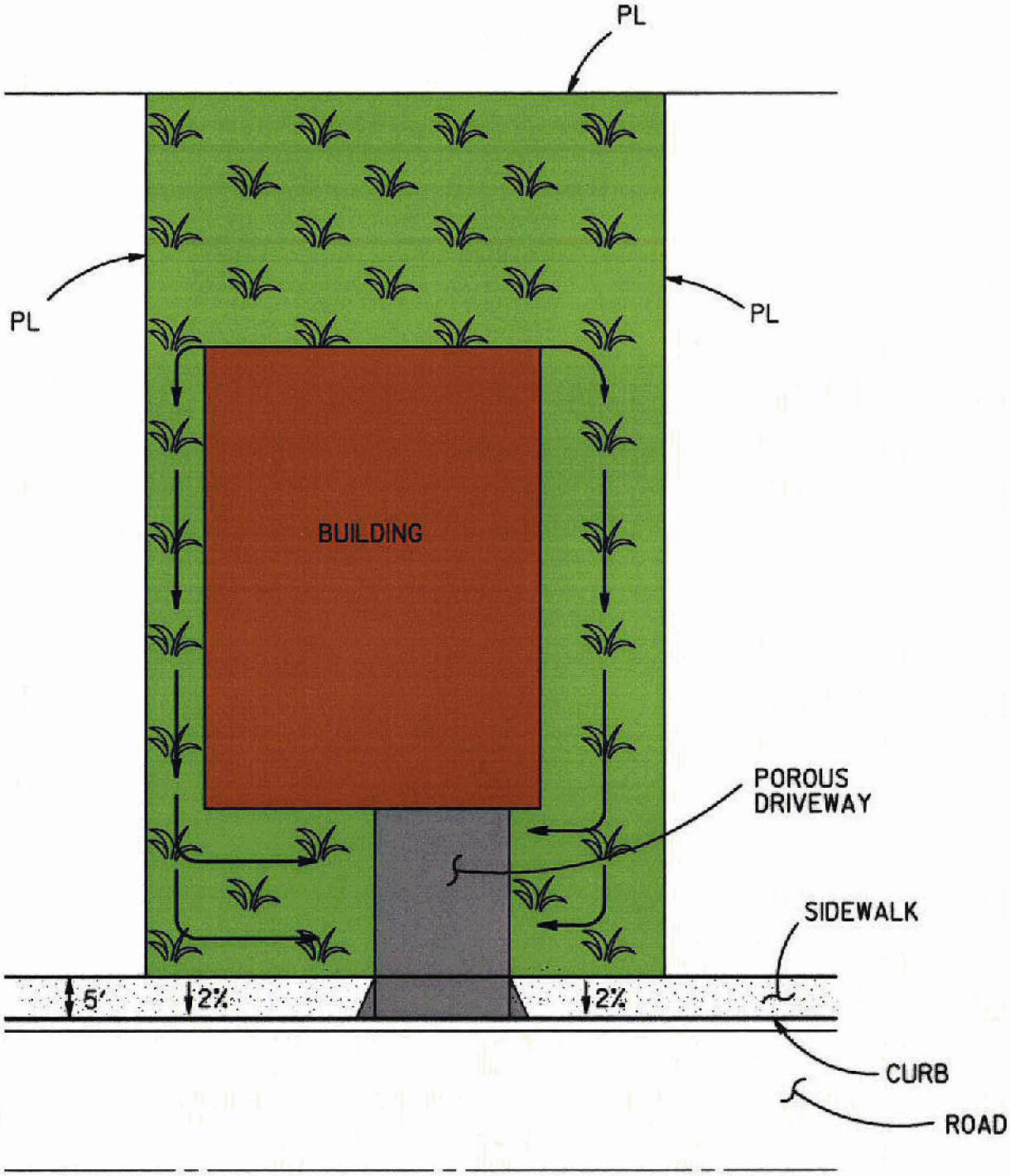
* In SDHM modeled as Impervious Lateral Basin connected to Pervious Lateral Basin connected to Pond

Appendix E

Hydromodification Management Details



TYPICAL DETAIL 1 FOR DRAINAGE BASINS 2000A, 3000, 4000 AND 7000A



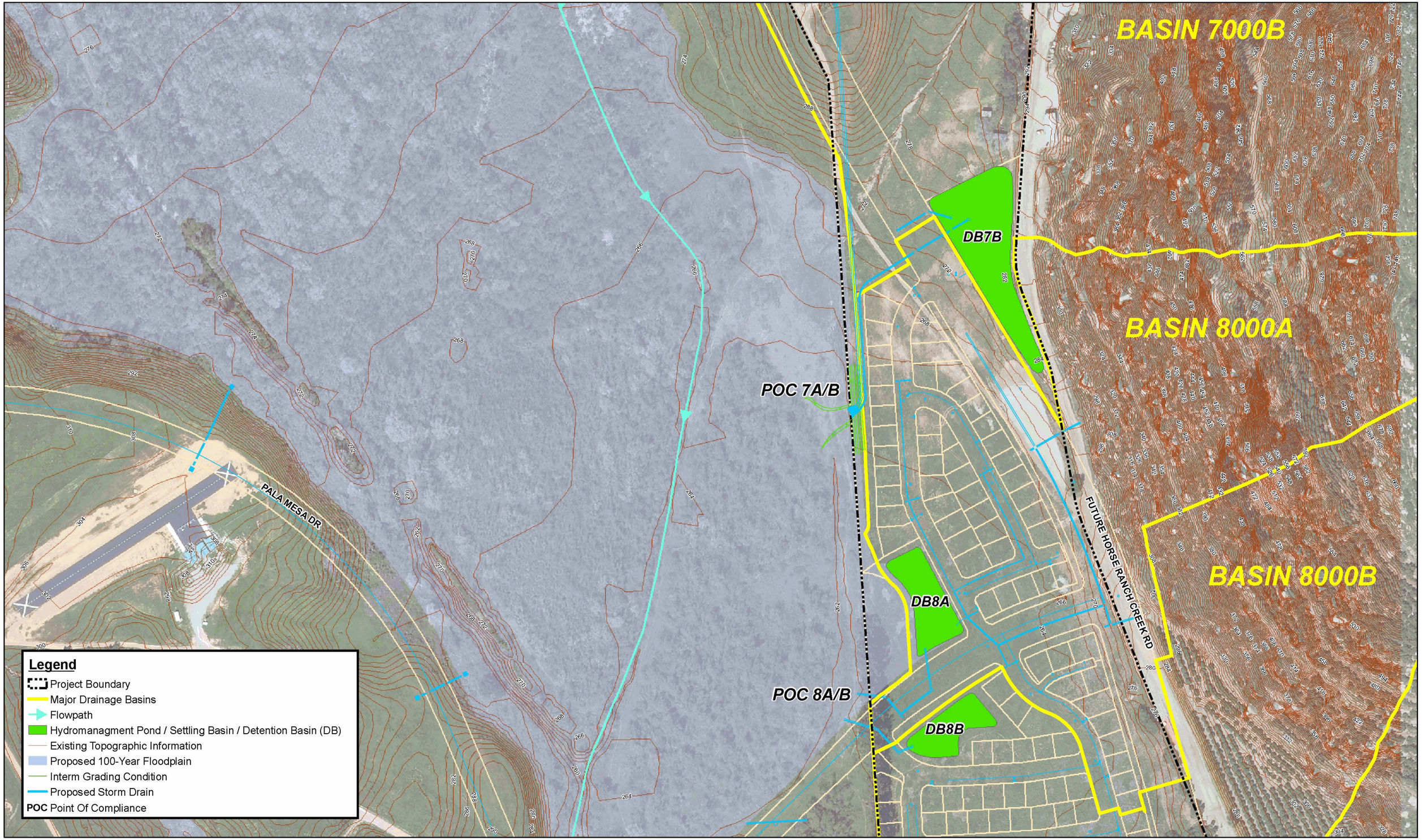
TYPICAL DETAIL 2 FOR DRAINAGE BASINS 8000A, AND 8000B

Appendix F

Meadowood Vesting Tentative Map – Flowpaths for Drainage Basin 7000

Meadowood Vesting Tentative Map – POC 7A/7B and 8A/8B (Interim Condition)

Meadowood Vesting Tentative Map – POC 7A/7B and 8A/8B (Ultimate Condition)



Meadowood Vesting Tentative Map - POC 7A & 7B (Interim Condition)

Filepath: J:\15956\Hydro\15956_HRC_7A7B_Pre.mxd
Exhibit Date: 07/20/09
REC JN: 15956

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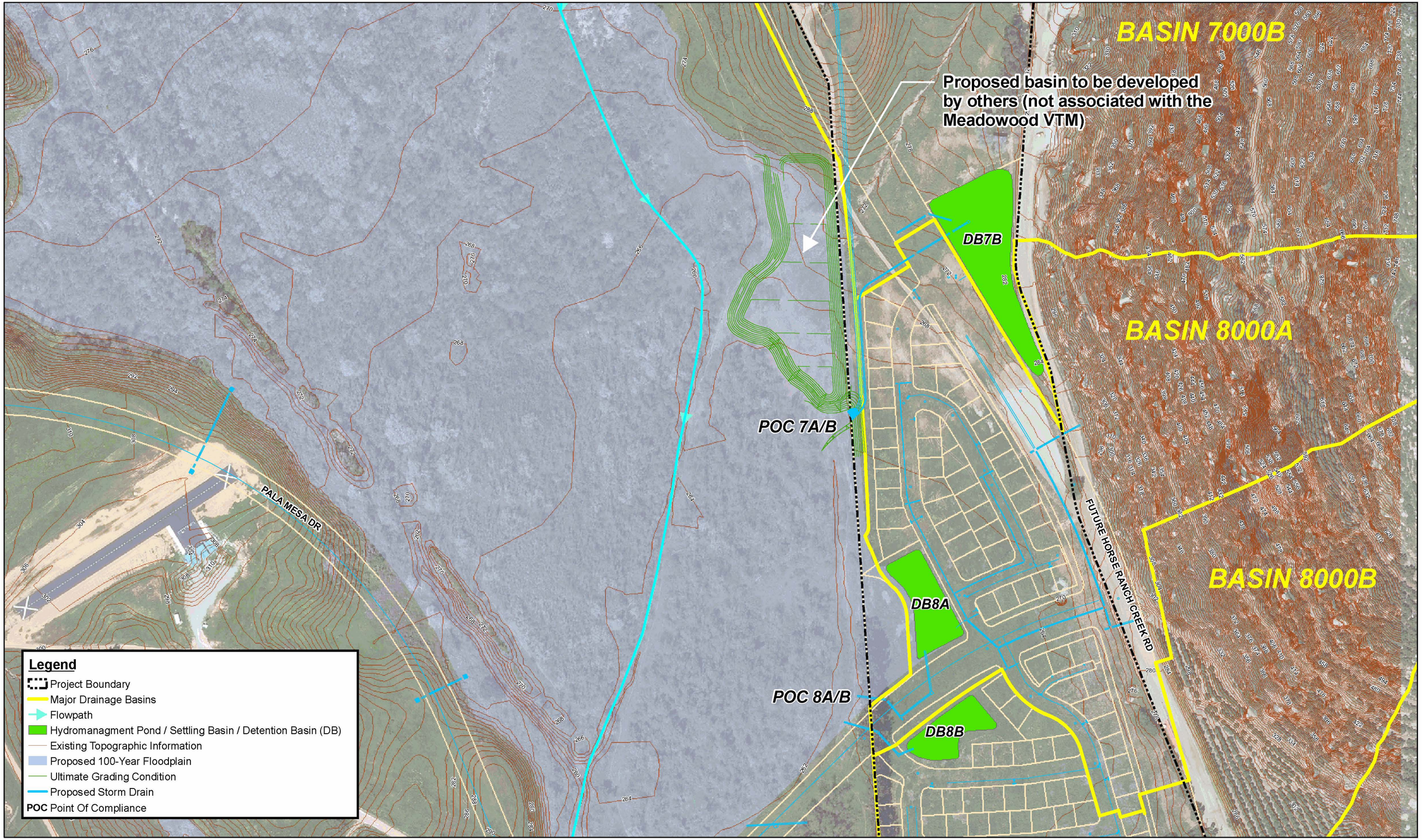
Data Sources:
SanGIS Assessor Parcels: N/A
SanGIS Roads - October 2008
Eagle Aerial Photo: March 2009

RICK ENGINEERING COMPANY



Meadowood Vesting Tentative Map - POC 7A & 7B (Ultimate Condition)

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Exhibit Date: 07/20/09
REC JN: 15956

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Data Sources:
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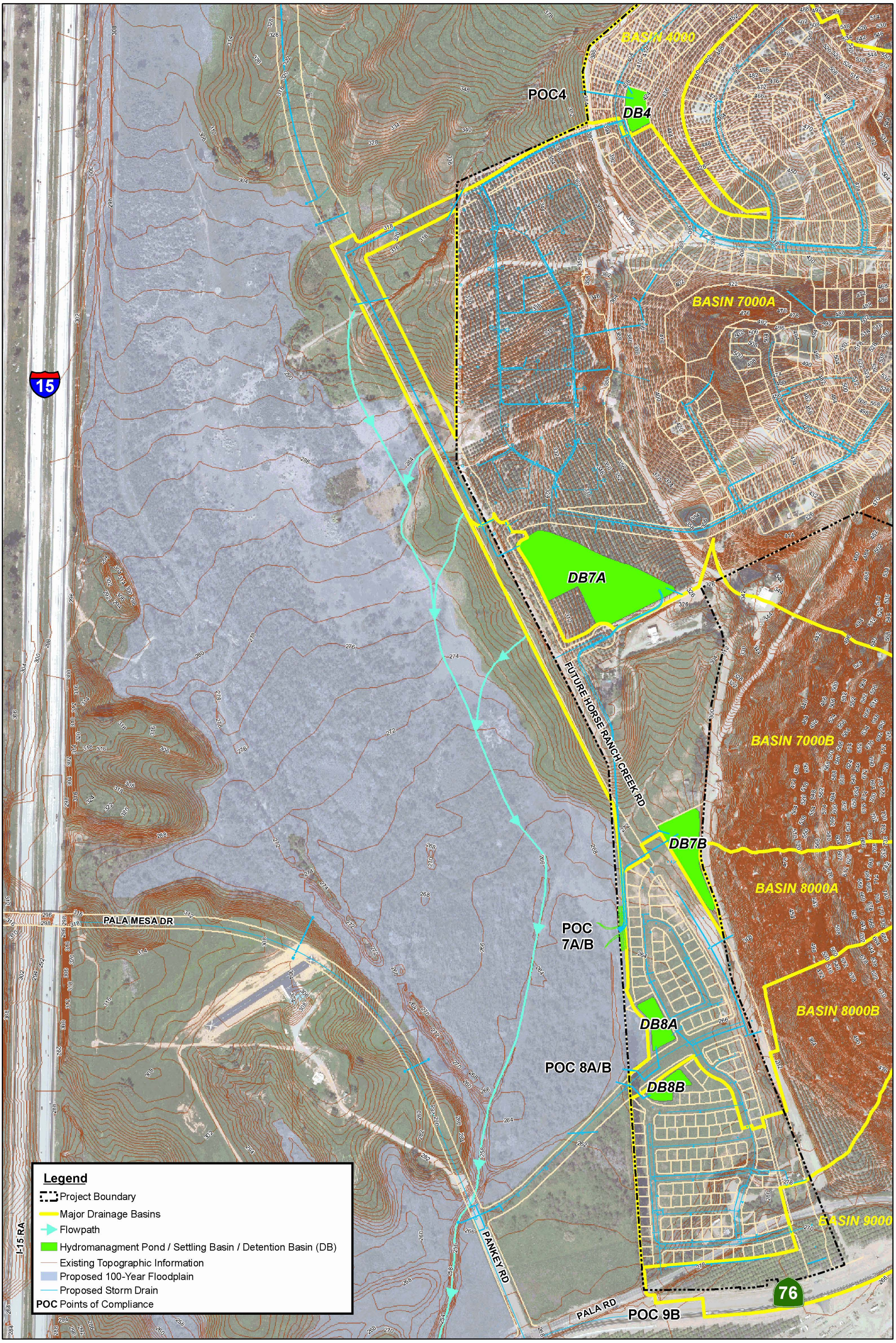
SanGIS Roads - October 2008
Eagle Aerial Photo: March 2009

RICK ENGINEERING COMPANY



Meadowood Vesting Tentative Map - Flowpaths For Drainage Basin 7000

Filepath: J:\15956\Hydro\15956_HRC_VestingOverview.mxd
Exhibit Date: 07/20/09
REC JN: 15956

0 200 400 800 Feet

Data Sources:
SanGIS Assessor Parcels: N/A
SanGIS Roads - February 2006
Eagle Aerial Photo: January 2009

RICK ENGINEERING COMPANY